

**Waste Characterization and Disposal Report and
Removal Action Work Plan
Mine Casings and Debris Removal
Sites 2 and 9 and Site Screening Area 4
Naval Weapons Station Yorktown
Yorktown, Virginia**

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1.0 Introduction

This document presents the Waste Characterization and Disposal Report and Removal Action Work Plan for the removal of mine casings and debris from Site 2 (Turkey Road Landfill), Site 9 (Plant 1 Explosives-Contaminated Wastewater Discharge Area), and Site Screening Area (SSA) 4 (Weapons Casing Disposal Area [formerly designated as Site 22]) at the Naval Weapons Station (NWS) Yorktown in Yorktown, Virginia. Surface soils at all three sites which may be contaminated with the spilled contents of various solid waste contaminants will be left in place for remediation at a later date. IT Corporation (IT) has prepared this document in accordance with Delivery Order No. 0008 under Remedial Action Contract (RAC) No. N47408-92-D-3045. This document represents an integrated approach was selected to meet the requirements of Task Data Item Nos. A005 and A006, as listed on the Contract Data Requirements List (CDRL) contained within the Statement of Work for the Preconstruction Submittals.

1.1 Document Objectives

The objectives of this document are to discuss the executed site investigation, report the site investigation findings and subsequent analytical testing results, make disposal recommendations, and provide technical guidance for the safe removal of wastes at each site. This document achieves these objectives in accordance with the following contract documents:

- Final Statement of Work, Mine Casings and Debris Removal, Sites 2, 9, and 22 NWS Yorktown, Yorktown, Virginia
- CDRL (DD1423), Nos. A001 through 006 dated July 29, 1993 with distribution list
- Atlantic Division (LANTDIV), Naval Facilities Engineering Command (NAVFACENCO) Specification No. 05-93-3120, Mine Casings and Debris Removal, Sites 2, 9, and 22, NWS Yorktown, Yorktown, Virginia
- Vicinity and location maps and notes, Mine Casings and Debris Removal, NAVFAC Drawing No. 4258095, Sheets 1 through 5.

1.2 Document Organization

The Delivery Order CDRL required that a separate Waste Characterization and Disposal Report and Work Plan Package be submitted; however, the Navy accepted IT's proposal to

integrate both documents into one as a cost-effective alternative. Accordingly, this document has been organized into the following sections:

- Section 1.0 - Introduction
- Section 2.0 - Waste Characterization and Disposal Report
- Section 3.0 - Removal Action Work Plan.

Appendices A through G provide the following information:

- Appendix A - Site-Specific Safety and Health Plan (SSHP)
- Appendix B - Construction Quality Control Plan Addenda (CQCPA)
- Appendix C - Environmental Protection Plan
- Appendix D - Laboratory Chemical Analytical Results
- Appendix E - Construction Specifications
- Appendix F - Closeout Report Requirements.

Tables 1 through 7 present the following:

- Table 1 - Drum Inspection, Testing, and Sampling Information
- Table 2 - Drum Composite Sampling System
- Table 3 - Sampling and Analysis Program
- Table 4 - Analytical Program to Borrow Material Samples
- Table 5 - Analytical Program for Surface Soil Samples
- Table 6 - Analytical Program for Excavation/Decontamination Water Samples
- Table 7 - Analytical Program for Sediment Fence Deposit Samples.

Figures 1 through 8 present the following:

- Figure 1 - Site 2 Removal Action Site Plan
- Figure 2 - Site 9 Removal Action Site Plan
- Figure 3 - SSA 4 Removal Action Site Plan
- Figure 4 - Removal Action Details
- Figure 5 - IT Organization Chart
- Figure 6 - Project Schedule
- Figure 7 - UXO Removal Flow Diagram
- Figure 8 - UXO Inert Certification Label.

1.3 Public Release of Information

IT will not publicly disclose any information concerning any aspect of the materials of services related to this Delivery Order without prior written approval of the Remedial Project

Manager (RPM) or Navy Technical Representative (NTR). The above-mentioned information will be inserted as a flow down clause within all subcontracts and purchase orders related to this project.

2.0 Waste Characterization and Disposal Report

This chapter documents the site investigations performed at Sites 2 and 9 and SSA 4 (formerly known as Site 22), and presents the disposal requirements based on field observations, laboratory analytical data, and regulatory requirements. Specifically, this chapter consists of the following:

- A listing of the site investigation objectives
- A synopsis of the work completed during the site investigations
- A presentation of the findings that resulted from the field observations and analytical testing conducted on the drummed wastes
- A discussion regarding waste characterization along with recommendations for disposal of each type of waste identified.

2.1 Site Investigation Objectives

The objectives of the site investigation were as follows:

- Identify and inventory the different types of wastes present at each of the three sites
- Conduct magnetometer surveys to identify the limits of buried metallic debris or conform otherwise
- Perform limited test pitting at SSA 4 to verify the magnetometer survey findings
- Complete detailed topographic surveys
- Perform sampling, field testing, and laboratory analysis of drummed waste materials to determine disposal requirements.

All of the above-mentioned objectives were incorporated within the Removal Action Work Plan (Chapter 3.0) which has been prepared to serve as a guidance document during the performance of removal actions at each site.

These objectives were met through implementation of the following IT preconstruction submittals prepared specifically for the site investigation:

- Site Investigation Work Plan
- Construction Quality Control Plan Addenda
- Site-Specific Safety and Health Plan.

These preconstruction submittals were prepared in accordance with Specifications Section 00010, Final Statement of Work for Delivery Order No. 0008, and were approved by the Navy prior to initiating the site investigation.

2.2 Scope of Work

The scope of work for this project was comprised of the following work components:

- Two site walks and meetings
- Preliminary magnetometer survey of SSA 4
- Preconstruction submittal preparation, submission, and approval
- Mobilization
- Site setups
- Unexploded ordnance (UXO) and surface debris inspection and inventory
- Drum identification, sampling, and field testing
- Drummed waste compositing and analytical testing
- Site surveys
- Data evaluation
- Waste Characterization and Disposal Report preparation.

IT provided the labor, materials, and equipment required to successfully complete the above-mentioned tasks in order to prepare the Removal Action Work Plan which will be utilized during performance of the removal actions for each site.

2.3 Safety and Health

The site investigations were performed in accordance with the SSHP developed for the project as a preconstruction submittal. The SSHP was prepared in accordance with Occupational Safety and Health Administration (OSHA) guidelines as specified in 29 Code of Federal Regulations (CFR) 1910.120, Delivery Order requirements, and IT policies and procedures.

All site personnel, including subcontractors, reviewed the SSHP and were familiar with it's requirements prior to initiating the site investigations. A copy of the SSHP was signed by all site personnel to certify that the review was completed.

In addition to a thorough understanding of the SSHP, site personnel also attended daily tailgate safety meetings which were held by the Site Safety and Health Coordinator (SSHC). The meetings consisted of briefings by the SSHC that discussed both site-specific and construction-related topics. A tailgate safety meeting form was signed by each attendee.

2.4 Quality Control

The site investigations were performed in accordance with the CQCPA which was developed for the project as a preconstruction submittal. The CQCPA was prepared in accordance with the Master Contractor Quality Control Plan developed by IT specifically for the Combined Waste RAC. The CQCPA described the site-specific quality requirements that were to be followed during the site investigation. The Quality Control (QC) Representative monitored the site investigation tasks in accordance with the requirements set forth within the CQCPA to verify the site investigations were completed in accordance with the Delivery Order requirements.

2.5 Field Documentation

Field documentation was completed in accordance with the requirements outlined in the CQCPA. The following forms were completed on an as-needed basis during the site investigations:

- Construction Quality Control Reports
- Field Activity Daily Logs
- Daily Reports to the Inspector
- Daily/Weekly Work Plans
- Sample Collection Logs
- Request for Analysis and Chain of Custody Records.

Variance and nonconformance reports (also specified in the CQCPA) were not necessary during the course of the site investigations.

IT forwarded copies of the Daily Reports to the Inspector to the NTR while all other forms have been placed in IT's project file.

2.6 Site Walk and Prewrite Meeting

IT conducted a site walk of the three sites with Navy personnel from NWS Yorktown, LANTDIV, NAVFACCO, and Naval Energy and Environmental Support Activity (NEESA), during the afternoon of October 19, 1993. The purpose of the site walk was to gain a first-hand understanding of the three sites and their respective project requirements. In addition, personnel discussed waste material present at the sites, proposed site investigation techniques, and project scheduling. During the site walk, the Navy suggested that IT evaluate alternatives to excavation of test pits, since disruption to site vegetation was to be minimized. The Navy also stated that limited information regarding the UXO present at each site was available.

Based on the information gathered during the initial site walk, IT requested that a second site walk be held with both IT and NWS Yorktown explosives, ordnance, and demolition (EOD) personnel in attendance. During the second site walk, which was held on December 20, 1993, IT EOD personnel met with NWS Yorktown EOD personnel and determined that no live UXO appeared to be present at the three sites. During this second site walk, IT also conducted a preliminary magnetometer survey at SSA 4 and confirmed that a magnetometer survey should be used to delineate the limits of metallic objects buried at SSA 4 prior to excavation of confirmatory test pits. This combined approach was selected since it provided greater investigative potential, while minimizing disturbance to the vegetation.

2.7 Preconstruction Submittals

Two Delivery Order-required preconstruction submittals, the SSHP and the CQCPA, in addition to a Site Investigation Work Plan, were prepared by IT. All plans were completed in accordance with Delivery Order requirements. These documents were submitted by IT to Navy distribution on January 7, 1994. Navy technical review comments were subsequently received by IT, appropriate revisions were made, and IT redistributed the modified documents on March 4, 1994. IT received final comments from the Navy during the week of March 14, 1994 and incorporated the final changes into the documents. IT received verbal approval from the Navy on March 18, 1994 to proceed with the site investigations.

2.8 Site Investigations

The following sections discuss the activities completed by IT during the investigations at Sites 2 and 9 and SSA 4.

2.8.1 Mobilization

IT mobilized personnel to perform the site investigations on March 21, 1994. The IT site investigation crew consisted of the following personnel:

- Site Superintendent (who also served as SSHC and QC Representative)
- Chemist
- EOD specialist
- Two environmental technicians.

In addition, the IT Project Manager was present during the first week of the investigation to assist in project execution and to discuss subsequent activities with Navy personnel.

2.8.2 Site Setup

Site setup commenced during the morning of March 21, 1994 when the IT Project Manager and Site Superintendent presented an overview of the site investigations to the personnel. The briefing consisted of the following issues:

- The first tailgate safety meeting was conducted by the Site Superintendent with all site investigation personnel. The investigation objectives were discussed and the preconstruction submittals were reviewed. Site-specific conditions, such as wastes present, investigation boundaries, and site topography were also discussed so that all individuals would have a thorough understanding of the requirements prior to the initial site walks. Each employee signed the daily tailgate safety meeting form as an acknowledgement of their participation in the meeting.
- Project assignments were made. IT implemented the buddy system consisting of two investigative teams of two persons each. One team consisted of the EOD specialist and an environmental technician, while the other team consisted of the chemist and the second environmental specialist.
- Upon completion of the initial briefing, the investigation teams traveled to each site where the Project Manager and Site Superintendent further discussed the site requirements. Here each member became familiar with the sites, UXO and wastes present, and topography.

2.8.3 Site 2 (Turkey Road Landfill) Investigation

The Turkey Road Landfill, also known as Site 2, is a 5-acre landfill located east of Turkey Road in a marsh adjacent to the south branch of Felgates Creek. Operations at the landfill began in the 1940s and stopped during 1981. The landfill is encompassed by a wooded area

ranging from approximately 50 to 300 feet in width, which is in turn bounded on three sides by streams (including Felgates Creek). It is within this wooded perimeter surrounding the landfill that IT concentrated the Site 2 investigation, as this area contains numerous UXO along with other wastes deposited on the surface. Figure 1 presents a plan view of Site 2, along with surface waste locations and boundaries.

2.8.3.1 UXO Inspection and Inventory

The first task completed during the investigation was a walk through by the IT EOD specialist to determine whether any live UXO was present. Upon completion of this survey, both investigative teams began inspecting and inventorying the wastes present at Site 2.

The IT EOD investigative team initiated a thorough inspection and inventory of the UXO present on the surface. A member of the NWS Yorktown EOD Detachment also assisted in the identification of the UXO. No live UXO were confirmed in place during the investigation; however, a small number of suspected live UXO were discovered and later removed from the site by the NWS Yorktown EOD Detachment. These UXO were later confirmed to be inert by the NWS Yorktown EOD Detachment. The remaining UXO and/or ordnance components identified at Site 2 include:

- MK 39 MOD 0 underwater mine (one located)
- NMM-19 anti-tank mines (four located and removed from the site by the NWS Yorktown EOD Detachment)
- MK 25 MOD underwater mines (estimated quantity exceeds 100 units)
- MK 6 MOD depth charges (estimated quantity exceeds 100 units)
- 2-inch hedge hog with projector charge (several units located)
- MK 49 MOD 0 drill mine (one located)
- MK 84 2000 pound bomb (one located)
- 500-pound general purpose old style bombs (over 30 located)
- 1000-pound general purpose old style bombs (over 30 located)
- Mine Case 7

- MK 51 MOD 2 moored mine (approximately 6 located)
- MK 16 (approximately 13 located).

The voluminous quantity and scattered and obscured manner in which the UXO were disposed prohibited a total unit count. The majority of the UXO are located along the banks of Turkey Road Landfill directly adjacent to Felgates Creek. These areas consist of varying topography and are intermingled with trees and dense brush. The UXO appear to have been indiscriminately dumped and scattered over these areas. In addition, a beaver dam constructed along the east branch of Felgates Creek has caused much of the UXO in this vicinity to be submerged. Each of these conditions combined to limit access to the UXO at Site 2 and prohibit a total unit count from being developed during the investigation. In any event, the objective of obtaining an accurate estimate of UXO at Site 2 was met as described in the following. In order to quantify the UXO within the identified disposal areas, the IT EOD investigative team delineated the UXO disposal areas with pin flags which were later surveyed by Miller-Stephenson, P.C. Figure 1 presents a plan view of the delineated UXO disposal areas. The data gathered during the site investigation was then evaluated and used to estimate the volume of UXO in the disposal areas at Site 2. Estimated UXO thickness were determined for each area. An approximate UXO thickness of three feet was used for two areas (i.e., area near Site 2 entrance and area adjacent to the intersection of the east and west branches of Felgates Creek where the topography is relatively flat). An average UXO thickness of seven feet was used along the banks of Turkey Road Landfill where the thickness of UXO increased to a maximum of approximately 10 feet in some places.

In addition, IT also sampled specific UXO (i.e., rocket launchers and an MK 47 torpedo) to determine whether suspected asbestos materials were present. Based on the laboratory analytical results provided in Appendix D, the suspected UXO did not contain any asbestos.

2.8.3.2 Magnetometer Survey

Following the inspection and inventory of UXO, the IT EOD investigative team conducted a magnetometer survey of the landfill. Five equally spaced paths were mowed across the landfill by NWS Yorktown maintenance personnel to provide a uniform surface for the survey. During the survey, the continuous presence of buried metallic objects was determined at only one of the transection lines. Only isolated buried metallic objects were determined to

be present elsewhere. Figure 1 presents the locations of the transection lines and the location of the concentrated buried metallic objects. IT did not complete test pits here so as to not disrupt the landfill cap.

2.8.3.3 Surface Debris Inspection and Inventory

The IT investigative team led by the chemist conducted a survey of the surface debris present at Site 2. Numerous types of wastes were determined to be present within the wooded perimeter of the landfill. The investigation was completed by IT personnel walking the entire perimeter of the landfill and recording the different waste types and locations. Waste pile perimeters were staked and identified for subsequent surveying.

The following debris was identified on the ground surface at Site 2:

- 35-gallon high-efficiency particulate air (HEPA) filter drums containing green filter media
- Construction/demolition debris (i.e., asphalt, concrete, plastic sheeting, etc.)
- Carbon zinc batteries (Type BA-309-4-B)
- Railroad ties.

Figure 1 presents the plan location of all surface debris found at Site 2.

2.8.3.4 Drum Investigation

Concurrent with the surface debris inspection and inventory, the IT investigative team completed an inventory of drums disposed at Site 2. A total of 19 drums were found with each drum being identified by affixing a numbered metal tag. The tags were securely attached to each drum so they could be properly located during both the site survey and the scheduled removal action. Next, each drum was individually inspected. A total of two distinct waste types were found to be present within the drums at Site 2: tar emulsion in Drum Nos. 42, 47, 48, 49, 50, and 51 and filter material in Drum Nos. 33, 34, 35, 36, 37, and 38.

2.8.3.5 Drum Field Testing and Sampling

Based on the initial inspection, all drums were found to be either empty or to contain solid waste materials. No liquid wastes were found to be present. The chemist obtained a sample from each drum containing solid waste. The sample were visually inspected and evaluated using a series of qualitative field screening tests. This procedure is commonly known as hazardous waste categorization (HAZCAT). The tests were designed to provide information regarding the physical and chemical characteristics of the contents of each drum, with the following objectives:

- Indicate whether additional analyses are needed to define waste characteristics
- Determine compatibility with other wastes
- Identify appropriate packaging and shipping requirements
- Characterize waste for ultimate disposal.

The hazard categorization criteria used for the solid wastes are described below:

- Indication of flammable nature - the concentration of volatile organic vapors in the headspace above each containerized sample was measured. The presence of explosive vapor mixtures was also determined. Headspace vapor concentrations greater than 1000 parts per million (ppm) or headspace explosive vapor concentrations greater than 0 percent of the lower explosive limit were considered positive results.
- Indication of combustible nature - evaluated only if the sample did not exhibit a positive result in both of the flammability tests. Test consisted of placing a 1-inch candle flame to the end of the material packed 0.25 inches deep and 4 inches long in a scoopula. A burning rate of 1 inch per 10 seconds or more was considered a positive result.
- Indication of reactivity with water - tested to determine compatibility with other materials and to determine whether the sample required further evaluation and classification as a reactive material or a reactive hazardous waste. If the wetted solid emitted heat, bubbles, or vapors, then the test result was positive.
- Water solubility of solid - evaluated to determine compatibility.
- pH of aqueous solution presented in the drum or generated during the solubility test - measured to determine compatibility and probable handling requirements. A pH less than 5 or greater than 9 was considered a positive result.

- Presence of oxidants and peroxides - tested to determine compatibility with other materials and to determine whether the sample required further evaluation and classification as an oxidizer or a reactive hazardous waste.
- Presence of cyanides - tested to determine compatibility with other materials and to determine whether the sample required further evaluation and classification as a poison or a reactive hazardous waste.
- Presence of sulfides - tested to determine compatibility with other materials and determine whether the sample required further evaluation.
- Chlorinated hydrocarbons - measured to identify the presence of such compounds and to indicate the need for further analysis.

2.8.3.6 Drummed Waste Sampling and Analysis

Upon completion of the drummed waste field testing, the results were reviewed to determine which samples exhibited similar hazard characteristics. Drummed wastes found to have similar characteristics were divided into sample groupings, then individually resampled for laboratory analysis. Two waste streams with similar characteristics were determined to be present. Accordingly, drums containing similar materials were categorized as individual waste streams and samples were obtained for analytical testing. To acquire the waste stream composite samples, equal aliquots were obtained from each drum comprising the waste stream. The aliquots were placed within a stainless steel bowl, then carefully mixed to form a homogeneous sample. Next, each composite sample was placed into the appropriate sample container. The sample containers were then labeled (labels were covered with clear tape), placed into double ziplock bags, packed securely in coolers, and preserved with ice. The sample containers were protected from breakage by either wrapping in bubble wrap or by surrounding with styrofoam packing material. A Request for Analysis and Chain-of-Custody Record was completed and placed into a ziplock bag and taped to the inside of the cooler lid. The cooler was then taped shut with strapping tape and chain-of-custody seals placed across the cooler lid.

The composite samples were shipped via overnight courier to the IT Analytical Services (ITAS) Laboratory in Export, Pennsylvania, where they were tested for ignitability, corrosivity, reactivity (ICR), and full toxicity characteristic leaching procedure (TCLP) parameters to determine whether the waste material was a characteristic hazardous waste. All

analytical testing was performed in accordance with the CQCPA. Section 2.8.6 presents a summary of the laboratory analytical testing.

2.8.3.7 Site 2 Survey

After both IT investigative teams had completed their assigned duties, including the delineation of all appropriate waste areas, a detailed topographic survey was conducted. IT's subcontracted surveyor, Miller-Stephenson and Associates, P.C., executed the survey in accordance with Delivery Order requirements. Site 2 was surveyed at 1-foot contour intervals, using mean sea level as vertical control and the Virginia State Plane South Zone for horizontal control. In addition, the survey included all waste areas delineated by IT as well as the pertinent physical features existing at Site 2.

2.8.4 Site 9 (Plant 1 Explosives-Contaminated Wastewater Discharge Area)

Site 9 was used from the late 1930s to 1975 as a drainage way for Plant 1 explosives-contaminated washwaters and possibly substantial quantities of organic solvents. During site walks conducted on October 19, 1993 and December 20, 1993, IT personnel observed surface debris strewn about both embankments adjacent to Collman Road. Figure 2 presents a plan view of Site 9, along with surface waste locations and boundaries.

2.8.4.1 UXO Inspection and Inventory

The first task completed during the site investigation was a walk through by the IT EOD specialist to determine whether any live UXO was present. Upon completion of this survey, both investigative teams began inspecting and inventorying the waste present at Site 9.

The IT EOD investigative team initiated a thorough inspection and inventory of the UXO present on the ground surface at Site 9. No live UXO was found. Approximately 50 MK 6 MOD 0-2 depth charges and one empty canister from an artillery round were the only UXO identified at Site 9. Figure 2 presents a plan location of these items.

2.8.4.2 Magnetometer Survey

Upon completion of the inspection and inventory of UXO, the IT EOD investigative team also performed a magnetometer survey of Site 9. The IT EOD specialist completed two transection lines on each side of Collman Road, as specified in the Site Investigation Work Plan. The IT EOD specialist also conducted a general site survey. The magnetometer survey

indicated an isolated metallic object at only one location adjacent to the confluence of the two streams to the west of Collman Road. Figure 2 presents the plan location of the buried object.

2.8.4.3 Surface Debris Inspection and Inventory

The IT investigative team led by the chemist conducted a reconnaissance of Site 9, using the same methods as previously described for Site 2. The only wastes found to be present (other than the previously described UXO) were railroad ties. The railroad ties were present at two locations, a large pile located over the embankment west of Collman Road, and a second pile located approximately 100 yards south of the aforementioned pile along the same side of Collman Road. Figure 2 presents a plan location of the railroad ties.

2.8.4.4 Drum Investigation

No drums were found by the IT investigative teams during the surface debris inspection and inventory at Site 9.

2.8.4.5 Site 9 Survey

After both IT investigative teams had completed their assigned duties, including the delineation of all appropriate waste areas, the detailed topographic survey was completed. IT's surveying subcontractor, Miller-Stephenson and Associates, P.C., executed the survey in accordance with Delivery Order requirements. Site 9 was surveyed using the same criteria previously described within Section 2.8.3.6 for Site 2.

2.8.5 Site Screening Area 4 (Weapons Casing Disposal Area) Investigation

The Weapons Casing Disposal Area is located near the intersection of Bypass Road and Main Road. During the October and December site walks, various UXO and surface debris were found to be present. In addition, IT completed a preliminary magnetometer survey of the field adjacent to Bypass Road since an apparent ravine fill had taken place within the area. During the preliminary survey, IT determined that a large portion of the field did have buried metallic objects beneath the surface. Figure 3 presents a plan view of SSA 4 along with surface waste locations and boundaries.

2.8.5.1 UXO Inspection and Inventory

As was standard procedure during the investigation at the other two sites, the IT EOD specialist conducted an inspection to determine whether any live UXO was present. Upon completion of this survey, it was determined that no live UXO was present on the surface.

The IT EOD investigative team then initiated a thorough inspection and inventory of the UXO present at SSA 4, with the following UXO identified:

- MK 9 MOD 3, MK 53, and MK 54 depth charges (approximately 25 present)
- MK 6 MOD 2 depth charges (numerous)
- Old style, general purpose 250-pound bombs (numerous).

The UXO was disposed at various locations on the surface, and was also found to be protruding from the embankment adjacent to the field west of Bypass Road.

2.8.5.2 Magnetometer Survey

Following the UXO inspection and inventory at SSA 4, the IT EOD investigative team completed a magnetometer survey at the grassy field to the west of Bypass Road to determine the limits of buried metallic objects. A total of seven transection lines were equally spaced along the length of the field, and the magnetometer was used to scan each transection line. IT confirmed that metallic objects were buried below the surface at the northern end of the field. Both the transection lines and the perimeter of the metallic object burial area were identified with pin flags. Figure 3 shows the location of both the transection lines and metallic object perimeter.

2.8.5.3 Confirmatory Test Pit Excavation

IT conducted a limited intrusive investigation consisting of excavation of shallow test pits at three locations within the metallic object area to confirm that the perimeter was correctly delineated. Each pit was hand dug (in lieu of heavy equipment to minimize disturbance to the vegetation) by the IT EOD specialist. Each 2-foot square excavation was advanced to an approximate depth of 2 feet. IT personnel completed this activity while utilizing OSHA Level B protection. The following materials were found to be buried beneath the grassy field at SSA 4:

- General construction/demolition debris (i.e., concrete, wood, brick, etc.)
- Deteriorated drums (no wastes present).

No live UXO was found to be present in any of the test pits. In addition to the waste delineation, IT also excavated test pits at two isolated areas adjacent to the delineated area where results of the magnetometer survey indicated that buried metallic objects were present. Again, no live UXO was encountered; however, railroad I-beams and steel cable were found.

2.8.5.4 Surface Debris Inspection

The IT investigative team led by the chemist conducted a survey of the site to determine the nature and extent of surface debris disposed. Numerous types of debris were identified within the wooded portion of SSA 4. These materials included:

- Drums (both 5 and 55 gallon size)
- Fire extinguishers
- Construction/demolition debris.

IT personnel walked the entire area and delineated the waste areas using survey stakes and flagging. All delineated waste areas were then surveyed by Miller-Stephenson and Associates, P.C., as shown in Figure 3.

2.8.5.5 Drum Investigation

Concurrent with the surface debris inspection and inventory activities, the IT investigative team completed an inventory of drums disposed at SSA 4. Each drum was identified by affixing a numbered metal tag. Each tag was securely attached so it could be properly identified during both the site survey and the upcoming removal action. Next, each individual drum was inspected. IT found that a total of 32 drums were present on the ground surface at SSA 4. The wastes found within these drums were composited into two waste streams: paint sludges found in Drum Nos. 2, 25, 26, 28, and 29 and paraffin wax found within Drum Nos. 7, 8, and 16. Table 1 presents a summary of the drums, while Table 2 defines the waste composite sample groupings.

2.8.5.6 Drum Field Testing and Sampling

Based on the initial inspection, all drums were found to be either empty or to contain solid waste materials. No liquid wastes were found to be present. The chemist obtained a sample from each drum containing solid waste, and followed the procedures previously discussed within Section 2.8.3.5 for Site 2.

2.8.5.7 Drummed Waste Sampling and Analysis

Upon completion of the drummed waste field testing, the results were reviewed to determine which samples exhibited similar waste characteristics. Drummed wastes found to have similar characteristics were divided into sample groupings and individually resampled for laboratory analysis. Two waste streams with similar characteristics were determined to be present. Drums containing similar materials were categorized into individual waste streams and samples were collected for laboratory analytical testing. The sample collection protocols previously discussed within Section 2.8.3.5 were repeated to obtain the waste composite samples at SSA 4.

The composite samples were then shipped via overnight courier to the ITAS laboratory in Export, Pennsylvania, where they were tested for ICR and full TCLP parameters to determine whether the waste material is a characteristic hazardous waste. All analytical testing was performed in accordance with the CQCPA. Section 2.8.6 presents a summary of the analytical testing.

2.8.5.8 SSA 4 Ground Survey

After both IT investigative teams had completed their assigned duties, including the delineation of all appropriate waste areas, the detailed topographic survey was performed. IT's subcontracted surveyor, Miller-Stephenson and Associates, P.C., completed the survey in accordance with Delivery Order requirements. SSA 4 was surveyed using the same criteria previously described within Section 2.8.3.7 for Site 2.

2.9 Site Investigation Analytical Results

An evaluation of the analytical results for the composite solid waste samples collected during the site investigations indicates that one of the waste categories meets the criteria for hazardous waste in accordance with the Virginia Hazardous Waste Management Regulations (10 VHWMR 672.3.5-9). The remaining three composite solid waste samples did not exhibit any hazardous waste characteristics. Waste from drums comprising sample grouping WP-001 exhibited the hazardous waste characteristic of toxicity due to extractable lead content (Waste Code D008). The waste in the remaining three categories was classified as nonhazardous solid waste. The ITAS certificates of analysis have been provided in Appendix D.

2.10 Estimated Disposal Quantities

During field testing operations, four different types of waste were identified from the 51 drums present at Site 2 and SSA 4. The waste materials consisted of four different types of solid waste. The different waste streams of drummed solids were divided into sample groupings WP-001 through WP-004 as indicated in Table 2. The estimated disposal quantities for each waste type are as follows:

- WP-001 - 1 cubic yard
- WP-002 - 1 cubic yard
- WP-003 - 72 cubic yards
- WP-004 - 10 cubic yards.

The total volume of hazardous and nonhazardous solid waste present at Site 2 and SSA 4 is 1 cubic yard and 83 cubic yards, respectively. These volumes were estimated by reviewing the sample collection logs completed by the field personnel and other information gathered during the site investigations. The descriptions of drummed waste included the approximate fraction of waste remaining in the drum and the drum or container size.

2.11 Disposal Recommendations

Presented below are the recommendations for disposal of waste materials encountered at Sites 2 and 9 and SSA 4.

2.11.1 Nonhazardous Solid Wastes

A review of the analytical results provided in Appendix D shows that the drummed wastes comprising solid sample groupings WP-002, WP-003, and WP-004 are nonhazardous waste and may be disposed of in a solid waste management facility (SWMF) as a solid waste. The HEPA filter drums from Site 2 and all crushed empty drums will also be disposed as nonhazardous waste. Accordingly, IT will forward the analytical results for these materials to several landfills in the vicinity of Yorktown, Virginia. Discussions will be held with these facilities to determine whether the nonhazardous waste will be accepted. Two private sanitary landfills near NWS Yorktown that are permitted to accept special wastes are as follows:

- Browning-Ferris Industries (BFI) Landfill (Permit No. 129) in Richmond, Virginia
- Chambers Landfill (Permit No. 531) in Richmond Virginia.

Clean Harbors Environmental Services, Inc. is also located in the vicinity and has the capability to serve as the transportation and disposal (T&D) subcontractor for nonhazardous solid waste. Once a disposal facility has been selected, a waste profile form will be prepared for review by the facility. The form will include a description of the waste, the waste quantity, and the ICR and full TCLP results. In addition, the Virginia Department of Waste Management (VDWM) must approve the disposal of special wastes into sanitary landfills. The approval process takes approximately 6 weeks.

2.11.2 Hazardous Solid Wastes

An evaluation of the analytical results provided in Appendix D revealed that the drummed wastes comprising solid sample grouping WP-001 are hazardous waste in accordance with the Virginia Hazardous Waste Management Regulations (10 VHWMR 672.3.5-9). The drummed wastes represented by solid sample grouping WP-001 will be transported to the designated Clean Harbors Environmental Services, Inc. or other selected T&D subcontractor's hazardous waste disposal facility(ies) located within the United States for final disposition. Accordingly, copies of the analytical results will be forwarded to a selected facility to determine whether the waste meets their requirements for disposal.

2.11.3 UXO

UXO from Site 2 will be processed and staged at Site 2 or other field designated location. At this point, the Defense Reutilization and Marketing Office's (DRMO) recycling/disposal subcontractors will inspect the UXO and the offer bids for removal and recycling/disposal. Once the DRMO subcontract is awarded, the DRMO subcontractor will remove the UXO from the designated staging area for recycling/disposal, as appropriate. UXO from Site 9 and SSA 4 will either be transported to Site 2 or other field designated location and managed as previously discussed, or transported directly to DRMO for recycling and/or disposal.

2.11.4 Surface Debris

Surface debris from Sites 2 and 9 and SSA 4 consisting mainly of construction/demolition debris (i.e., concrete, brick, asphalt, plastic sheeting, metal scrap, etc.) will be disposed at an approved construction/demolition debris landfill in the vicinity of Yorktown, Virginia.

2.11.5 Railroad Ties

Railroad ties from Sites 2 and 9 will either be removed and forwarded to the other remedial action contractor currently working at NWS Yorktown for reuse/disposal or reused/disposed off site, as appropriate.

2.11.6 Batteries

Carbon zinc batteries from Site 2 will be removed during the performance of the removal actions at Sites 4, 16, and 21 and disposed in accordance with the Removal Action Work Plan for Battery and Drum Removal at Sites 4, 16, and 21, dated February 1994.

3.0 Drum Removal Action Work Plan

This plan presents the project organization and remediation procedures developed for the performance of removal actions at Sites 2 and 9 and SSA 4 located at NWS Yorktown in Yorktown, Virginia. IT will perform the removal actions as a delivery order under RAC No. N47408-92-D-3045.

3.1 Removal Action Objectives

The objectives of the removal action are to remediate Sites 2 and 9 and SSA 4 by removing the mine casings and surface debris in a manner that minimizes the risk to human health and the environment and which complies with all federal, state, local, and NWS Yorktown regulations.

This Removal Action Work Plan outlines the plan for achieving these objectives in accordance with the Final Statement of Work, Mine Casings and Debris Removal, Sites 2, 9 and 22, NWS Yorktown, Yorktown, Virginia and NAVFAC Specification No. 05-93-3120, Mine Casings and Debris Removal, Sites 2, 9 and 22, NWS Yorktown, Yorktown, Virginia, which has been provided in Appendix E for easy reference.

3.2 Scope of Work

The scope of work for the removal actions consists of the following work components:

- Preconstruction conference and site walks
- Preconstruction submittal preparation and submittal
- Preliminary activities
- Mobilization
- Site setup
- Site preparation
- Waste removal operations
- Waste transportation and disposal
- Site restoration
- Close-out report preparation and submittal.

IT will provide all labor, supervision, tools, materials, equipment, and transportation necessary to perform the removal actions at Sites 2 and 9 and SSA 4.

3.3 Project Organization

The following sections describe the project organization components.

3.3.1 Organization

Figure 5 presents the IT organization chart for performance of the removal actions. Specific IT project staff assignments will be determined prior to mobilization. IT is confident that this Work Plan presents a thorough understanding of the removal actions. However, to achieve successful project performance, IT will implement the following management strategies:

- The IT Project Manager and Site Superintendent will closely monitor the project and keep the Navy informed of the project status on a continual basis. Any questions, problems, or changes to the project will be promptly addressed with the Navy being involved in the discussion.
- The IT Project Manager will closely monitor the project budget to ensure that a cost-effective product is provided to the Navy.
- IT will complete the work in a timely manner, promptly notifying the Navy of any changes to the project schedule.

3.3.2 Schedule

A preliminary schedule, as shown in Figure 6, illustrates the sequence and schedule of project activities. The anticipated duration of the removal actions is six months. This estimate is based on IT's history of projects with similar scopes of work.

IT will commence removal action performance in accordance with this Removal Action Work Plan within 10 calendar days after the date of notice to proceed is received. IT will perform the work diligently and complete the removal action, including final cleanup of the premises, within 180 calendar days after the required commencement of work. The completion date does not include the maintenance period for seeding.

3.3.3 Project Submittals

IT will address project submittals throughout the project, and anticipates the following documents will be required either as preconstruction submittals or during the course of the removal actions:

- SSHP
- CQCPA
- Submittal status log
- Environmental Protection Plan
- Environmental Conditions Report
- Testing laboratory qualifications
- Permits
- Network analysis diagram
- MIS required sorts
- Status reports
- Daily reports to inspector
- Construction Quality Control Report
- Construction Quality Control meeting minutes
- Noncompliance check-off list
- Test Results Summary Report
- As-built records
- Closeout Report.

3.3.4 Health and Safety

The removal actions for Sites 2 and 9 and SSA 4 at NWS Yorktown in Yorktown, Virginia will be performed in accordance with the SSHP and will be provided as Appendix A. The SSHP will be prepared as a preconstruction submittal which will comply with current OSHA guidelines as specified in 129 CFR 1910.120, contract requirements, and IT corporate policies and procedures. The SSHP will define the health and safety requirements and designate the protocols to be followed at Sites 2 and 9 and SSA 4 during removal action activities. The SSHP is applicable to all IT and subcontractor personnel and visitors and will be reviewed prior to performing any field activities. The SSHC, who will be on site while work is in progress, will be responsible for administering the SSHP.

Specifically, a tailgate safety meeting will be held every morning during removal action performance to discuss health and safety issues associated with scheduled work activities. Each member of the field crew will attend the tailgate safety meeting and sign the form documenting the meeting.

IT anticipates that the removal action activities in the EZ will require Levels B, C, and D personal protective equipment (PPE). Continuous air monitoring will be conducted within the EZ using an HNu PID and explosimeter. The level of PPE may be downgraded by the Safety and Health Manager if determined to be appropriate.

3.3.5 Quality Control

A CQCPA, included as Appendix B, will be prepared in accordance with contract requirements and presents the overall quality control program developed for the removal actions. The CQCPA outlines the quality-related activities specific to the project that are required to demonstrate that the Removal Action Work Plan has been implemented and the performance requirements have been met. The program will verify through a system of inspections and tests, using scientific and engineering principles and practices, that the removal action components meet or exceed project plans and specifications. The CQCPA will be implemented by the QC Representative who will be on site while work is in progress to address quality control matters.

3.3.6 Removal Action Work Plan Objectives

The objective of this plan is to provide a technical guidance document which outlines the procedures for accomplishing the removal actions in a safe and cost-efficient manner. This plan will be complemented by the CQCPA and the SSHP which establish an integrated program for performance of the removal actions. The removal actions, as well as any other site operations, will be performed in accordance with applicable federal, state, local, and IT corporate policies and procedures, OSHA protocols, and Navy requirements.

3.3.7 Public Release of Information

IT will not publicly disclose any information concerning any aspect of the materials or services related to this delivery order without the prior written approval of the RPM or NTR. The above-mentioned information will be inserted in each subcontract and purchase order related to this project.

3.4 Removal Action

The following sections describe the removal actions field activities as they will be performed in chronological order.

3.4.1 Preliminary Activities

Several preliminary activities must occur prior to mobilization for efficient and effective removal action performance. These activities are required to satisfy contractual requirements and provide the necessary information to plan the removal actions and facilitate their completion once they have been initiated. The initial tasks will include:

- Holding a preconstruction conference to discuss and develop a mutual understanding with government representatives concerning scheduling and administering the work
- Conducting site walks to acquaint project personnel with the sites and identify pertinent features of each site
- Preparing preconstruction submittals for review and approval by the CO and to be used as guidance documents during performance of the removal actions
- Procuring subcontractors, materials, equipment, etc., as necessary to perform the removal actions
- Performing a borrow study in which prospective materials required for site restoration will be sampled and tested/analyzed at qualified geotechnical and analytical laboratories
- Obtaining applicable permits for uninterrupted performance of the removal actions.

Each of these activities is discussed in detail in the following sections.

3.4.1.1 Preconstruction Conference and Site Walk

A preconstruction conference and associated site walks will be conducted. Representatives of the various Navy affiliations and key IT project staff will attend the meeting and site walks to review the project and submittal requirements, discuss applicable NWS Yorktown regulations which must be followed during the removal actions, and to orient project personnel with the sites.

3.4.1.2 Preconstruction Submittals

In addition to this Removal Action Work Plan, IT will, as required, prepare and submit the following preconstruction submittals to Navy distribution for review and approval prior to mobilization:

- SSHP
- CQCPA
- Submittal Status Log (included in the CQCPA)
- Environmental Protection Plan (provided as Appendix C)
- Environmental Conditions Report
- Testing Laboratory Qualifications.

3.4.1.3 Procurement

Procurement is an important aspect of this project since the removal actions will entail T&D of both hazardous and nonhazardous waste. The services of T&D subcontractors required to complete the removal actions will be procured prior to mobilization. In addition, material purchases, equipment rentals, utility hookups, and miscellaneous subcontractor services necessary for removal action performance will be procured prior to and during mobilization. All procurement activities will be conducted in accordance with government rules and regulations and IT corporate policies and procedures.

3.4.1.4 Borrow Study

IT anticipates that imported materials will be required to accomplish site restoration; therefore, a borrow source will be located prior to removal action activities which can provide the specified quantity and quality of materials needed to perform site restoration. IT will investigate potential borrow sources within the area, locate a borrow source in the vicinity outside of Government property, and make arrangements to obtain representative samples of the proposed topsoil and backfill materials. The NTR will be notified at least 24 hours in advance of the sampling event. The samples will be collected in accordance with ASTM D 75. The samples will be clearly marked to indicate the source of the materials and the intended use on the project. The first set of samples will be sent to a qualified commercial testing laboratory for the following geotechnical tests:

- Soil classification of GC or SC in accordance to the Unified Soil Classification System (USCS) (American Society of Testing and Materials [ASTM] D 2487)
- Atterberg limits (ASTM D 4318) for backfill material only
- Percent by weight passing No. 200 sieve (ASTM D 1140) for backfill material only
- Standard Proctor (ASTM D 698) for backfill material only.

If the geotechnical requirements are satisfied, a second representative sample of the proposed topsoil and backfill materials will also be collected and analyzed to verify that imported materials do not contain hazardous levels of constituents listed under either the Resource Conservation and Recovery Act (RCRA) or Toxic Substance Control Act (TSCA) regulations.

These samples will be sent to the Quanterra (formerly ITAS) laboratory in Export, Pennsylvania for the following analyses:

- Ignitability (EPA Method in Chapter 7 of SW-846)
- Corrosivity (EPA Method in Chapter 7 of SW-846)
- Reactivity (EPA Method in Chapter 7 of SW-846)
- Toxicity Characteristic Leaching Procedure (TCLP) (EPA Method 1311)
- Polychlorinated Biphenyls (PCB) (EPA Method 8080).

Once an acceptable borrow source has been located, IT will submit certifications to the NTR stating that the materials conform to the geotechnical requirements specified and are free of contamination along with copies of test/analytical results from the qualified commercial testing and analytical laboratories at least 10 days before the materials are required for use at the site. Tentative acceptance of the borrow source will be based on an inspection of the borrow source by the NTR and/or the certified test/analytical results. No imported material will be delivered to the sites until the proposed source and material test/analytical results have been tentatively accepted in writing by the NTR. Final acceptance of the imported materials will be made by the NTR. All testing for final acceptance will be performed by IT.

3.4.1.5 Planning, Permits, and Passes

During the planning stages and prior to mobilization, IT will make every effort to coordinate the removal actions in a manner that eliminates any potential for downtime and results in a smooth progression of work. This will be achieved by making the necessary arrangements with the appropriate NWS Yorktown operations facilities for utilities and obtaining the applicable permits and personnel passes required for performance of the removal actions. The forms for permits and passes will be obtained from the NTR.

Security. IT will provide the NWS Yorktown Security Department via the NTR the information for IT and subcontractor personnel as is necessary to obtain passes to work at NWS Yorktown. Personnel information will consist of the following:

- Name of company
- Name of employee
- Social Security Number
- Proof of U.S. citizenship
- A completed contractor/vendor Criminal History Report
- A completed application.

Proof of citizenship will consist of copies of birth certificate, military dependent ID card, or naturalization paper which will be returned once entered into the security computer system. A criminal check of all personnel will be conducted by the NWS Yorktown Security Department. Denial of entry based on the results of the security check will not be a basis for damages or extension of time. A criminal check for material delivery personnel will not formally be required.

The NWS Yorktown Security Department will run a security check on IT and subcontractor personnel and, as a condition of employment, each employee must be willing to sign an authorization form allowing the Security Department to conduct the criminal check. The authorization form will be maintained on file by the NWS Yorktown security officer. Based on the results of the criminal check and proof of U.S. citizenship, the security officer will or will not grant entry. If entry is denied, IT will immediately be notified by the NTR.

IT is responsible for all of its employees. IT will be responsible for familiarizing its own personnel as well as subcontractor employees with NWS Yorktown traffic, safety, and security regulations.

Motor Vehicles. Ingress and egress of all personnel will be subject to security regulations of NWS Yorktown. All motor vehicles operated within the premises of NWS Yorktown must comply with the applicable motor vehicle codes of Virginia, which are incorporated into the NWS Instruction 550.5G, "Security and Traffic Regulations." Copies may be obtained from the NTR.

Utilities. IT will provide utilities, as required, to complete the removal actions. Electricity will be provided using an adequately sized generator. Telephone and telefax service will be arranged with the same company utilized by NWS Yorktown. Water will be obtained from the approved sources and stored in high-volume tanks for use during the removal action. Sanitary service will be provided locally through the use of portable toilets.

Work Permits. Permits required for removal action activities will be obtained from the appropriate NWS Yorktown operations facilities pursuant to the paragraph entitled "Station Regulations." IT understands that burning is not allowed at NWS Yorktown. Permit application forms will be obtained from the NTR. At least 7 calendar days will be allowed

for processing the permit applications. IT does not anticipate the need for disconnecting any utilities to perform the removal actions; however, if this situation should arise, IT will provide the appropriate NWS Yorktown operations facility at least 15 days notice.

Work Schedules. IT will schedule the work so as to cause the least amount of interference with NWS Yorktown operations. Work schedules will be subject to the approval of the OICC. The regular work hours for NWS Yorktown are 0715 to 1545, Monday through Friday. If work is scheduled outside of regular work hours or on weekends or holidays, IT will submit an application to the CO with a minimum of 24 hours notice. Approval for after hours work will be made on a case-by-case basis; however, the government cannot guarantee that any extra work will be authorized. If night work is requested, IT will provide lighting of the work areas in an approved manner.

Equipment. Equipment owned by IT for use during the removal action will have the company name painted or stenciled on the equipment in a conspicuous location while rental equipment will be marked with a tag identifying the renter's name. If use of radio transmitters is required to perform the removal action, IT will obtain prior approval and register transmitters with the NWS Yorktown Security Department. IT will conform to the NWS Yorktown restrictions and procedures for the use of radio transmitting equipment.

All IT equipment will comply with MIL-STD-16165 for internal combustion engines and MIL-STD-461 and MIL-STD-462 for electric motors and other devices capable of producing radiated or conducted interference. Electric motors used by IT during removal action performance will comply with MIL-STD 461 relative to radiated and conducted electromagnetic interference. If required, IT will conduct tests on electric motors and construction equipment in accordance with MIL-STD-461 and MIL-STD-462. The location for these tests will be reasonably free from radiated and conducted interference. IT will also supply the testing equipment, instruments, and personnel for making the tests as well as test location and other necessary facilities. A test for electromagnetic interference will not be required for motors that are identical physically and electrically to those that have previously met the requirements of MIL-STD-461. An electromagnetic interference suppression test will not be required for electric motors without commutation of slip rings having no more than one starting contact and operated at 3,600 revolutions per minute or less.

3.4.2 Mobilization

Sufficient construction personnel, equipment, and materials will be mobilized to the site to initiate removal action activities. The following field personnel will be mobilized to perform the removal actions at NWS Yorktown:

- Site Superintendent
- QC Representative
- SSHC
- Equipment operators
- Laborers.

The major equipment required for the removal actions will consist of the following:

- One office trailer
- One shower trailer
- Two generators
- One hydraulic excavator
- One rubber-tired combination backhoe/front end loader
- One small smooth drum compactor
- Hand compaction equipment
- One drum grappeler
- Scales
- Roll-off containers
- Two high-volume storage tanks
- One portable submersible pump
- Hoses, fittings, etc.
- One pick-up truck
- One HNu PID
- One explosimeter/oxygen analyzer.

Miscellaneous office and health and safety materials, as well as material needed for general remediation, will also be obtained and brought on site prior to and during removal action performance.

3.4.3 Site Setup

The first series of work activities performed at the site as part of the removal action will be site setup. The primary purpose of site setup is to establish the field facilities necessary to accomplish the removal actions. Site setup activities will include:

- Performing clearing, grubbing, and chipping operations, as necessary, to perform the removal actions at each site
- Delineating and constructing the construction site entrance and site access roads at each site
- Establishing a field office complete with electric and telephone/telefax service and parking at Site 2
- Identifying and designating the temporary laydown areas as well as specific locations for storage/stockpiling of construction equipment and materials at each site
- Erecting a perimeter security fence, as appropriate, around the designated work areas at each site
- Identifying and designating the contamination control zones, as required, at each site
- Establishing a personnel decontamination facility at each site
- Constructing an equipment decontamination pad, drum handling area, and roll-off container storage areas at the sites, as appropriate
- Performing an inventory and inspection of equipment and materials; in particular, health and safety related items, to verify IT is prepared to perform the removal actions.

Each of these tasks is described in detail in the following sections.

3.4.3.1 Clearing, Grubbing, and Chipping

Clearing, grubbing, and chipping operations will be performed at each site, as necessary, to remove the trees, low brush, and grass within the areas designated for use during the removal action. IT will obtain approval from the NTR prior to removal of trees. These areas may include the access road, personnel/equipment decontamination areas, equipment and material laydown area, drum handling area, roll-off container storage areas, and portions of the EZ to allow access. Trees and brush will be cut flush with the ground. Felled trees and brush will be cut into manageable sections and chipped. The wood chips will be temporarily stockpiled on site and will either be properly disposed or utilized during site restoration.

3.4.3.2 Temporary Site Access Road Construction

Access to Sites 2 and 9 and SSA 4 will be required to perform the removal actions; therefore, temporary site access roadways, including construction site entrances, will be constructed as illustrated in Figures 1, 2, and 3.

Access road requirements will be coordinated with the RPM and NTR. If necessary, the initial 50 feet of the construction site entrance/exit which adjoins the adjacent paved road at each site will be stabilized to prevent the traveling of mud, dirt, or sediment onto NWS Yorktown roads. The construction site entrance as well as other temporary site access roadways will be a minimum of 10 feet in width.

Initially, the access road alignment will be lightly graded to level the ground surface and remove objectionable materials. The construction site entrance and access road will be constructed, if necessary, of a layer of Mirafi 500X, Amoco Type 2002, or approved equivalent filter fabric placed on the ground prior to placing 6 inches of size No. 1 gravel as defined in the Virginia Department of Transportation (VDOT) Road and Bridge Specifications (RBS), Section 203. The stabilized construction site entrance will be maintained during the removal actions in a condition that will prevent tracking or flowing of mud, dirt, or sediment onto NWS Yorktown roads. This may require periodic cleaning to remove accumulated mud, dirt, sediment, or other debris and/or top dressing with additional gravel as conditions demand.

If, during the course of the removal actions, mobility of construction equipment/vehicles is inhibited, then improvements will be made to the access road. This procedure of upgrading temporary site access roadways will be accomplished with the placement of Size No. 1 gravel on an as-needed basis and will minimize the amount of site restoration required at the end of the project. Site traffic will be kept to a minimum and will be confined, as much as practical, to the designated temporary site access roadways.

3.4.3.3 Field Office Establishment

A field office trailer of sufficient size and in good condition will be located adjacent to Site 4 at the proposed location shown in Figure 1 or at another designated field location approved by the NTR. The trailer will be free of rust, damage, and deterioration and must meet all applicable safety requirements. The trailer will be furnished with a 4-foot-by-8-foot plan

table, a standard size office desk, and chair for use by the QC Representative. The trailer will also be of adequate size to provide room for the QC records which will be filed in the office and available at all times to the government. The trailer will comply with all appropriate state and local requirements and will be anchored accordingly to resist high winds. The office trailer will be maintained in good, clean condition during removal action performance. The trailer will be locked when not in use. A sign no smaller than 24 inches by 24 inches will be conspicuously placed on the lower left hand corner of the left door of the trailer depicting the following information:

- Company name
- Address
- Registration number of trailer or vehicle identification number
- Location on base
- Duration of contract or stay on base
- Contract number
- Local on-base phone number
- Off-base phone number of main office
- Emergency contact person and phone number.

IT will make arrangements for all utility connections and subsequent disconnections. IT will coordinate with the appropriate NWS Yorktown operations facilities to schedule installation or obtain electric, telephone, and water service, as required, for the removal action. A portable toilet will be provided for sanitary service.

3.4.3.4 Work Area Identification

The various work areas required to complete the removal actions will be designated as illustrated in Figures 1, 2, and 3 or otherwise indicated by the NTR. The existing waste areas were delineated during the site investigations and will remain as such until completion of the removal actions. The drum handling area at Site 2 and SSA 4 will be centrally located adjacent to the equipment decontamination pad. This area will serve as the location where the drums will be emptied of their contents and decontaminated. Roll-off container storage areas at Site 2 and SSA 4 will be located near the entrance of the equipment decontamination pad within the EZ and will be used for the temporary storage of crushed drums and nonhazardous solid waste. Access to the existing waste areas will be limited to authorized personnel only. Equipment and material laydown areas at each site will be used to store construction machinery, equipment, and tools when not in use and temporarily stage

construction materials and supplies needed during the removal actions. Other containers, such as empty 55-gallon drums, used to contain disposable PPE will also be placed in these areas. The decontamination water staging area at each site will be located within the contamination reduction zone (CRZ) for periodic removal of decontamination fluids as they accumulate. A high volume storage container (i.e., frac tank or equivalent) will be positioned within these areas and surrounded by an earthen berm to contain the water in the event of container failure.

3.4.3.5 Perimeter Security Fence Erection

A security fence will be erected, as appropriate, around the perimeter of the designated work areas as shown in Figures 1, 2, and 3. The fence will consist of high-visibility orange construction fence approximately 4 feet high attached to steel fence posts driven 2 to 3 feet into the ground every 10 feet. The fence will be secured to the posts using wire or plastic ties.

3.4.3.6 Contamination Control Zone Delineation

Contamination control zones consisting of an EZ, CRZ, and a support zone (SZ) will be established as shown in Figures 1, 2, and 3. The zones will be delineated accordingly with the placement of warning signs and barrier tape. A brief description of each zone and its function is included in the following:

- **EZ** - The EZ consists primarily of the existing waste areas at Sites 2 and 9 and SSA 4 and the drum handling and roll-off container storage areas at Site 2 and SSA 4. These areas are known to contain contaminated materials and have the highest potential for exposure to the contaminants by contact or inhalation, therefore, appropriate PPE must be worn when working in this zone.
- **CRZ** - The CRZ is comprised of the personnel decontamination facility and the equipment decontamination pad at each site. This is the corridor through which all personnel and equipment must pass through to enter or exit the EZ. Personnel and equipment decontamination will also occur here thereby providing a safe and controlled transition for personnel and equipment.
- **SZ** - The SZ consists of the field office at Site 2 and the temporary equipment and material laydown areas, the stabilized construction site entrances and the remainder of the temporary site access roads at each site. This is an uncontaminated area used for storage and general administrative functions.

3.4.3.7 Personnel Decontamination Facility Establishment

A personnel decontamination facility will be established at each site within the CRZ adjacent to the equipment decontamination pad to provide personnel controlled transition from the EZ to the SZ and vice versa. The main personnel decontamination facility, complete with a shower trailer, will be located at Site 2 while Site 9 and SSA 4 will have satellite facilities for donning and doffing PPE. A step-off area will be located at the entrance to the personnel decontamination facility for respirator and outer glove removal. A boot wash, hand wash, and emergency shower will also be provided in this area. Drums will be positioned within this area to dispose of nonreusable PPE. A trailer dedicated to personnel decontamination containing clean and PPE dressing rooms furnished with lockers and benches and divided by a shower room will be set directly next to the step-off area at Site 2 as illustrated in Figure 1. The clean dressing room will be the only personnel access to the SZ from the EZ. Personnel will enter the EZ by removing their clothing in the clean dressing room, proceeding to the PPE dressing room where PPE is donned for performance of removal action work activities. Personnel will exit the EZ by doffing PPE in the CRZ step-off area, proceeding to the showers, and getting dressed in the clean dressing room. Information regarding use of the personnel decontamination facility including proper donning and doffing procedures for Levels B and C PPE will be outlined in the SSHP.

3.4.3.8 Equipment Decontamination Pad, Drum Handling Area, and Roll-Off Container Storage Area Construction

Equipment Decontamination Pad. All equipment and materials leaving the EZ which may have come in contact with contaminated material will be decontaminated at this location. The equipment decontamination pad will be centrally located adjacent to the personnel decontamination facility as shown in Figures 1, 2, and 3. The equipment decontamination pad will consist of an area approximately 12 feet wide by 20 feet long graded to remove objectionable materials. Next, the area will be covered with two layers of 6-mil polyethylene liner placed on grade with earthen berms constructed around the perimeter to contain runoff from decontamination operations. The entrance and exit berms will be constructed so as to allow passage of construction machinery and equipment and site vehicles and still contain the decontamination fluids. A sump will be installed at a convenient location by excavating a hole and inserting a 55-gallon drum or equivalent vessel into the hole. A typical equipment decontamination pad detail is shown in Figure 4. The liner will be placed over the earthen

berms and securely anchored around the perimeter by placing soil onto the outer edge. The liner will also be custom cut to let the decontamination water flow into the sump. Plywood or similar material that will withstand the heavy loads anticipated, but will not inflict damage to the liner, will be placed across the length of the equipment decontamination pad to provide ingress and egress for construction machinery and equipment and site vehicles. A portable, sufficiently-sized, submersible pump will be set in the sump to periodically transfer the decontamination water via hoses to the storage tank temporarily staged nearby.

Decontamination will be accomplished using a high pressure/low volume washer or steam cleaner fed by water from the nearby high-volume polyethylene tank. Construction machinery and equipment and site vehicles will be decontaminated to meet the requirements defined in the CQCPA.

Drum Handling Area. The drum handling area at Site 2 and SSA 4 will be used to separate the solid material from the drums. The drum handling area will consist of an approximate 10-foot square graded to remove objectionable materials and covered with two layers of 6-mil polyethylene liner to prevent contamination of the underlying soils. A steel plate will be placed over a section of the liner to provide a working surface for emptying the drums and scooping up the solid wastes. Berms will be constructed around the perimeter of the area and a sump will be installed in a similar manner as performed for the equipment decontamination pad. The drum handling area will be of sufficient size to allow handling of one to two drums at a time.

Roll-off Container Storage Areas. The roll-off container(s) staged within Site 2 and SSA 4 will be used to store crushed drums and nonhazardous solid wastes. The roll-off container storage areas will have dimensions measuring approximately 10 feet wide by 20 feet long. These areas will be covered with one layer of 6-mil polyethylene liner. Upon exiting the EZ, the wheels of the trucks and sides of the roll-off will be decontaminated.

3.4.3.9 Equipment and Material Inventory

An inventory and inspection of construction equipment and material mobilized and/or procured for the removal actions will be conducted to verify that IT is prepared to perform the prescribed work activities. The inventory and inspection will be completed by the QC Representative and the SSHC and will include confirmation of the following:

- Proper equipment and materials are on hand and in good working order or are of acceptable quality for their intended use
- Sufficient quantity, if applicable, of the required equipment and materials is on site or is readily available to prevent unnecessary delays or downtime.

Particular attention will be paid to the condition of safety and health apparatus and PPE to make sure it is functional and of sound integrity since these items are critical to worker safety and health.

3.4.4 Site Preparation

The next set of work activities performed at the sites will be preparing the sites for all subsequent construction operations required to fulfill the removal actions. These initial tasks will include:

- Conducting a field subsurface survey to verify and field reference the location and elevation of existing utilities, and any other type of underground obstruction within the designated work areas.
- Protecting all site features from damage which may occur during performance of the removal actions
- Installing erosion and sedimentation controls consisting of silt fence around the perimeter of the site and downgradient of work areas.

3.4.4.1 Field Subsurface Survey

The field subsurface survey will consist of verifying the elevation and location of existing piping, utilities, and any type of underground obstruction indicated in locations to be traversed during the removal actions at each site. IT will accomplish this task by employing a qualified underground utility location service. A qualified individual will scan the sites with suitable equipment, including electromagnetic and/or sonic devices, to identify both the location and elevation of existing utilities. The ground surface will be field referenced directly over the discovered utility to indicate alignment and depth. All utility locations at the sites will be identified on "as-built" drawings or on drawings provided by the government. Movement of construction machinery and equipment over pipes during the removal actions will be at IT's risk. IT will repair or remove and provide new pipe for existing pipe that has been displaced or damaged. IT will take appropriate measures to prevent damage to underground utilities

and confirm that utilities are accurately shown on government records made available to IT or located by the field subsurface surveys. The findings of the field subsurface surveys will be given to the NTR.

3.4.4.2 Protection of Site Features

Prior to and during the performance of the removal actions, site features such as signs, utilities, monitoring wells, roads, trees, etc., will be protected, as much as practicable, to prevent damage which may result from removal action operations or weather. IT will protect existing site features which are to remain in place, be reused, or remain the property of the government against damage from heavy equipment and vehicular traffic by placing wooden barricades and/or high-visibility ribbon, as necessary, around the respective site feature. Items which are to remain and are damaged during removal action performance will be repaired to their original condition or replaced with new.

IT will protect all utilities including electrical and mechanical services. If removal of existing utilities and/or pavement is required, IT will provide approved traffic barricades, temporary covering of exposed areas, and temporary services or connections for electrical and mechanical utilities. The NTR will be notified prior to implementing traffic controls. Traffic barricades equipped with flashing lights will be placed at locations where pedestrian and driver safety may be endangered during removal action operations at each site. The traffic barricade will be anchored accordingly to prevent displacement.

If a warning of gale force winds is issued for the vicinity, IT will take the necessary precautions to minimize the danger to persons and protect the work and any nearby government property. Precautions will include, but are not limited to, closing openings, removing loose materials, tools, and equipment from exposed locations and removing or securing scaffolding or other temporary work. Openings in the work will also be closed if storms of lesser intensity pose a threat to the work or any nearby government property.

3.4.4.3 Erosion and Sedimentation Control Installation

IT will install temporary controls to minimize erosion and sedimentation and prevent pollution of water and land at the site and contiguous work areas during the removal actions in accordance with Virginia Soil and Water Conservation Commission (VSWCC) Virginia Erosion and Sediment Control Handbook (VESCH). Installation of temporary controls will be

coordinated to maintain effective and continuous control of erosion and pollution. The primary erosion and sediment control techniques utilized will be silt fencing, straw bales, and temporary seeding. Erosion and sediment control measures will be site adapted and field modified to suit construction operations. An Erosion and Sediment Control Plan detailing the erosion and sediment control measures to be implemented during the removal actions has been included as part of the Environmental Protection Plan (Appendix C). The Erosion and Sediment Control Plan was prepared in accordance with the VSWCC and VESCH.

Silt Fences. IT proposes using a preassembled silt fence, called Envirofence™, manufactured by Mirafi, Inc., or an approved equivalent. The silt fence will be installed in accordance with manufacturer's recommendations. The silt fence filter fabric and height of the structure will comply with the specifications. The silt fence will also be installed, as appropriate, around the perimeter of the designated work areas as shown in Figures 1, 2, and 3. The following procedures will be employed during installation:

- Excavate a 6-inch-by-6-inch trench along the proposed silt fence alignment
- Unroll 100-foot bundles of silt fence and position posts against the downgradient wall of the trench with the reinforcement netting on the downstream side of flow direction
- Drive posts into the ground using a sledge hammer until netting is approximately 2 inches from the trench bottom
- Lay the toe-in flap of the filter fabric in the bottom of the trench, backfill the trench, and tamp the soil
- Join silt fence sections using coupler.

Straw Bales. If required, another means of controlling erosion and sediment will be the use of straw bales. Straw bales will be constructed from grain straw or hay with each bale bound together with binding wire or twine. The straw bales will be installed as shown in the detail in Figure 4 using 2-inch-by-2-inch wooden posts.

Straw bales will not be used in lieu of silt fence or temporary seeding. If straw bales are determined necessary, the following installation procedure will be employed:

- Embed the bottom row of straw bales in a 4-inch deep trench, placing bales tightly abutting each other so that the bindings are horizontally oriented around the bales.
- Wrap with wire to adjoin the bales together.
- Anchor each bale with two stakes, driving the first stake towards the previously laid bale.
- Wedge straw in gaps between straw bales.
- Once bales are staked, the excavated soil from the trench will be backfilled against the straw bales to ground level on the downhill side and to 4 inches above ground level on the uphill side.

Temporary Seeding. Temporary seeding is another erosion and sediment control measure which will be employed, if deemed necessary. Within 48 hours, IT will provide seed, fertilizer, and mulch on graded areas when one or more of the following conditions exist:

- Grading operations stop for an anticipated duration of 30 days or more
- Cut or fill slopes are 5 feet in vertical height or more
- It is determined to be impossible or impractical to bring an area to finished grade so that permanent seeding operations can be performed without serious disturbances from additional grading
- Grading operations for a specific area are completed and seeding seasons specified are more than 30 days away
- Immediate cover is required to minimize erosion or when erosion has occurred
- Erosion control devices are constructed of soil materials.

The seed will be state certified and from the latest season's crop. The seed type and quantity (pounds per acre) are dependent on the anticipated planting season and will consist of one of the three following mixtures:

		Planting Season	
Seed Type	November 16 - January 31	February 1 - April 15 October 16 - November 5	April 16 - October 15
Hybrid Fescue	200	200	
Red Top	6	6	6
Bermuda	45 (unhulled)	45 (unhulled)	100 (hulled)

The fertilizer will comply with Federal Specifications (FS) O-F-241, Type I, Class 2, with 10 percent nitrogen, 20 percent available phosphoric acid, and 10 percent potash and will be applied at a rate of 1,000 pounds per acre.

The mulch will be air-dried straw suitable for placement with commercial mulch blowing equipment. The mulch will be spread at a rate of 1.5 tons per acre and anchored by crimping the mulch with a disc.

Prior to seeding, the ground surface will be loosened to a minimum depth of 4 inches. The seed, fertilizer, and mulch will be uniformly applied at the specified rates. After applying seed and fertilizer, the areas will be rolled accordingly. Seed and fertilizer will not be applied when the NTR determines conditions to be unfavorable. Finally, water will be provided to promote growth.

Inspection and Maintenance. IT will inspect erosion control devices after each rainfall and daily during prolonged rainfall. Sediment deposits will be removed from silt fence after each rainfall or when sediment reaches one half the barrier height. IT will immediately repair damaged erosion control devices as well as damaged areas around and underneath the devices. The erosion control devices will be maintained to assure continued performance of their intended function in accordance with the VSWCC and VESCH.

Cleanup. Upon completion of the project or when directed or approved by the NTR, erosion and sediment control devices will be removed. Erosion and sediment control devices and areas immediately adjacent to the device will be filled where applicable, graded to drain, blended into surrounding contours, and finished as specified. Erosion and sediment control devices may remain in place when approved by the NTR.

3.4.5 Waste Removal

Waste removal operations will not begin until authorization is received from the NTR. The primary types of waste material identified during the site investigations at Sites 2 and 9 and SSA 4 are:

- Various types of UXO
- Surface debris consisting of construction/demolition debris, railroad ties, and fire extinguishers
- Drums containing hazardous and nonhazardous solid waste
- Carbon zinc batteries.

The different waste materials found at each site are as follows:

Waste Material	Site 2	Site 9	SSA 4
• UXO	✓	✓	✓
• Surface Debris	✓	✓	✓
- Construction/Demolition Debris	✓		✓
- Railroad Ties	✓	✓	
- Fire Extinguishers			✓
• Drums	✓		✓
- Hazardous Solid Waste			✓
- Nonhazardous Solid Waste	✓		✓
- Empty	✓		✓
- HEPA Filters	✓		
• Carbon Zinc Batteries	✓		

The following sections describe the general waste removal operations as well as the specific removal procedures for each type of waste material encountered at Sites 2 and 9 and SSA 4.

3.4.5.1 Waste Removal Operations

During the course of the removal action, various general waste removal operations will be performed, including dust control, excavated materials loadout, roll-off container management, temporary containment of contaminated soil, and decontamination. Each of these work activities are discussed in the following paragraphs.

All land disturbing activities will be planned so as to minimize the size of the area to be exposed at any one time and to minimize the duration of exposure. Surface water runoff originating upgradient of exposed areas will be controlled, where possible, to minimize surface water from entering the work areas and facilitate removal action operation. This will be accomplished by constructing temporary ditches, swales, berms, and other drainage features and equipment, as required, to maintain dry soils. In the event that unsuitable working platforms for equipment operation, the unsuitable material will be removed and replaced with new soil material, as specified. In addition, access to the work areas will be controlled with the placement of fencing or barrier tape around the perimeter.

Dust Control. IT will, as much as practical, prevent the spread of dust and avoid the creation of a nuisance or hazard in the areas surrounding the sites. Application of water will be repeated as required to control dust emissions. Water will be used as long as it does not result in hazardous or objectionable conditions such as, but not limited to, ice, flooding, or pollution.

Excavated Materials Loadout. Materials excavated as part of the removal actions will be loaded into roll-off containers or vehicles designed to transport such materials without spillage. The roll-off containers will be filled no more than three-quarters their intended capacity. Care will be taken during loading operations to minimize the potential of spillage, tracking, or other means of deposition of potentially contaminated materials outside the work area. Potentially contaminated materials which are accidentally spilled on roads, streets, or other areas outside the limits of work during loading will be immediately reported to the CO and immediately cleaned up to the satisfaction of the CO.

The quantity of work will be measured in tons which will be the actual weight of the solid waste removed as verified by the weigh scale ticket issued prior to shipping. No measurements will be made for control of water, protection of undisturbed areas, or other work associated with the excavation and loadout of contaminated materials at the site. These tasks are considered incidental to and part of the work.

Roll-Off Container Management. The roll-off containers will be used exclusively to contain waste materials (i.e., nonhazardous solid waste, empty drums, construction/demolition debris, railroad ties) during the removal action. Verification that the roll-off containers are

watertight will be made prior to use. The empty roll-off containers will be transferred to the waste disposal areas as removal action activities progress using an appropriately sized roll-off container transport vehicle or equivalent. The roll-off containers will be filled accordingly to approximately three-quarter capacity, covered with a tarpaulin, and loaded onto the transport vehicle. The transport vehicle will proceed to the equipment decontamination pad where the vehicle and roll-off will be decontaminated. The decontamination technician will be careful not to spray any water into roll-off containers. Once decontamination is complete, the vehicle will transport the roll-off to the roll-off container storage area at which point the roll-off will be unloaded onto several wooden blocks to keep the container from touching the ground. The roll-off containers will be temporarily stored in a neat and orderly fashion in accordance to type of waste material. The tarpaulins will be secured and inspected to confirm no holes or punctures exist that would allow entry of precipitation. If a hole or tear is found, it will be covered with duct tape, as necessary. The roll-off container storage area will be inspected daily to check the integrity of the roll-off containers and tarpaulins. Each roll-off container will have the following information either written or securely attached to the outside of the vessel:

- Type of material contained
- Volume of material contained
- Date placed in container.

Temporary Containment of Contaminated Soil. Temporary containment areas will be provided at each site, as appropriate, for storage of contaminated soils during removal action performance. The containment areas will be covered with 30 mil polyethylene sheeting in accordance with ASTM D 4397. The excavated contaminated soil will be placed on the impervious barrier and covered with 6 mil polyethylene sheeting. A straw bale berm will be installed around the outer limits of the containment area and covered with 6 mil polyethylene sheeting. The edges of the polyethylene sheeting will be secured with sandbags.

Decontamination. All site vehicles and construction machinery and equipment exiting the EZ will be decontaminated at the equipment decontamination pad. A technician will employ decontamination techniques using a high-pressure washer or steam cleaner. The decontamination rinsewater will be collected in the sump of decontamination pad and then pumped periodically in the storage container temporarily staged nearby. The water used for decontamination will be obtained from the NWS Yorktown water supply.

3.4.5.2 UXO Removal

Most of the surface debris at Sites 2 and 9 and SSA 4 is UXO. IT UXO specialists will be used to safely and efficiently remove and dispose of the UXO during the removal actions. UXO removal operations will be facilitated by the fact that most of the UXO observed during the site surveys were determined to be inert and do not present an explosive hazard. However, in the interest of project safety, this cannot be considered to be an indication that all of the UXO present at the three sites is inert. Therefore, all UXO will be considered to be live and extremely hazardous until it can be proven otherwise.

The UXO Supervisor assigned to the project will be responsible for determining the hazard presented by each UXO. Qualified UXO specialists may also be delegated the authority to identify UXO and determine the hazard presented by UXO during routine site operations. But, any UXO that is not easily and positively identifiable must be brought to the attention of the UXO Supervisor for a determination of the procedures to be used for handling that specific UXO, prior to any action being taken.

The following sections detail the technical approach that will be followed at all three sites while removing UXO. Nothing in the following sections should be allowed to contradict guidance contained in Appendix F, "Safety Concepts and Basic Considerations for Unexploded Explosive Ordnance" by the U.S. Army Corps of Engineers, Huntsville Division. This document is the basic technical safety guidance used by U.S. Army Corps of Engineers UXO contractors and has been proven to contain reliable and valuable basic safety information for UXO work.

Technical Approach to UXO Removal. The IT UXO specialists will work in two-person teams to identify and remove UXO from the three sites. Non-UXO trained site workers may assist in the removal effort but they should work in conjunction with, and under the direction of, a UXO specialist when they are working in an area where encountering UXO is possible.

No UXO will be moved unless it can be positively identified and determined to be safe for removal. The UXO team will approach the debris and attempt to positively identify as many UXO as possible. The positively identified UXO that are safe to be moved can then be removed from the debris pile and segregated from other UXO that may be explosively hazardous.

UXO may be moved remotely in cases where it is impossible to determine if the movement will disturb additional UXO in the surrounding area that have not been positively identified because they are obscured. In this case, such as at the debris pile at Site 2, where moving one UXO may inadvertently disturb other surrounding UXO, all nonessential site personnel will be evacuated from the work area and the IT UXO team will remotely move the UXO, using ropes and pulleys, while taking cover behind a building or other substantial structure. Under no circumstances may any UXO be intentionally disturbed that has not been positively identified as safe to be moved.

UXO that is identified as safe to be moved will be removed from the debris pile and closely examined for hazards. UXO will be segregated into two areas depending on whether they are ready for inspection by the Defense Reutilization and Marketing Office (DRMO) or require additional work to prepare them for DRMO.

A UXO removal flow diagram has been included as Figure 7 outlining the decision-making process when handling UXO.

UXO That Is Unsafe For Removal. UXO that can be neither positively identified nor determined safe for removal by the UXO Supervisor will not be moved by the IT UXO team. Remote movement of such UXO is not an option since the UXO has been identified as unsafe for removal. Remote movement can only be used if it is likely that the movement of a UXO, which has been identified as safe for removal, will cause a disturbance to nearby UXO which have not been positively determined as safe for movement.

In this case, the UXO Supervisor will notify the NWS Yorktown EOD Detachment for assistance. The NWS Yorktown EOD Detachment will address such items in accordance with their procedures. The IT UXO team will be available to assist and support the NWS Yorktown EOD Detachment upon request by the NWS Yorktown EOD Detachment.

Disposal of Inert UXO. The IT UXO team will dispose of the inert or nonhazardous UXO by processing it and staging it at Site 2 or other field designated location for inspection by the DRMO recycling/disposal subcontractors. The DRMO subcontractor will remove the UXO from the designated staging area for recycling/disposal, as appropriate. Processing of the

UXO scrap will be accomplished using the following procedures in accordance with the requirements of the Defense Utilization and Disposal Manual (DOD 4160.21-M):

- All UXO will be positively identified and segregated into hazardous and nonhazardous categories by the UXO Supervisor.
- UXO identified as nonhazardous will be further inspected by the UXO Supervisor to determine if venting is required. All UXO with sealed cases will require venting prior to turning in to DRMO to ensure that explosions are not caused by the sudden release of expanding gasses if the UXO is heated during recycling. Nonvented items will be identified and segregated from items that are already vented and have exposed fillers.
- Nonvented UXO will be segregated and left for treatment by the NWS Yorktown EOD Detachment. The IT UXO team will be available to assist the NWS Yorktown EOD Detachment with transportation and demolition range venting procedures upon request by the NWS Yorktown EOD Detachment.
- Small inert and vented UXO will be packaged in sealed wooden boxes with an inert certification label, signed by the UXO Supervisor, and attached to the sealed container. Large UXO, such as naval mines, will be transported individually to DRMO with the inert certification label affixed to each UXO. An example of an inert certification label is shown in Figure 8.
- Turn-in documentation will be completed and delivered with the UXO to the nearest DRMO.

Magnetometer UXO Surveys. IT UXO specialists may conduct a magnetometer survey to determine if the site contains buried metallic objects. The surveys will be conducted by sweeping the magnetometer over the area being investigated to detect buried ferrous metal objects. This operation will also be performed frequently during UXO excavation to decrease the chance of impacting a buried UXO by gauging the closeness of the excavation to buried UXO. IT UXO specialists will conduct the magnetometer survey using either a Foerster Ferex Ordnance Locator or a Schonstedt GA-52 series magnetometer. Both of these instruments are appropriate for different UXO search operations and the selection of the proper equipment to be used will be based on the geophysical requirements. Basically, the Foerster Ferex Ordnance Locator is a high-sensitivity precision magnetometer with superior detection capabilities, while the Schonstedt GA-52 is a less expensive and simpler instrument that is easy to use and highly portable.

Foerster Ferex Ordnance Locator. The Foerster Ferex Ordnance Locator, designated the MK 26 Ordnance Locator, is a military approved method of UXO location and is used by U.S. Military EOD forces for detecting subsurface UXO items. The instrument is a hand-held unit and uses two fluxgate magnetometers, aligned and mounted a fixed distance apart to detect changes in the earth's ambient magnetic field caused by ferrous metal or varying soil conditions. Both an audio and metered signal are provided to the operator.

The detection capability of the Foerster Ferex Ordnance Locator is dependent upon the size of the item versus its depth. It is calibrated at the factory service center to locate UXO to the following depths, which are verified by extensive military field use and operational testing at the U.S. Naval EOD Technology Center in Indian Head, Maryland:

ITEM	Depth (Ft.)
Small Arms Round	1
Hand Grenade	2
Anti-Personnel Mine	3
Anti-Tank Mine	4.5
Medium Projectile (105 mm)	10
Small Bomb	15
Large Bomb	19

A Foerster Ferex Ordnance Locator will be available for use on site and will be selected when a deep detection capability or down-hole geophysical capability is required.

Schonstedt GA-52 Magnetometer. The Schonstedt GA-52 Magnetometer is a dual fluxgate magnetometer and operates on the same principal as the Foerster Ferex Ordnance Locator, but the Schonstedt GA-52 is not tested and approved by the U.S. Naval EOD Technology Center and its ability to detect specific sizes of UXO at various depths has not been scientifically tested. The Schonstedt GA-52 is useful when used as an inexpensive and highly portable magnetometer to quickly screen surface and near-surface areas for ferrous content.

Magnetometer Survey Quality Control. The following quality control procedures will be employed during the performance of the magnetometer surveys:

- The magnetometer surveys will be performed by IT UXO specialists. These personnel will be trained and experienced in the use of the Foerster Ferex Ordnance Locator and the Schonstedt GA-52 magnetometer.
- New batteries will be used to perform the surveys and the instrument battery test, as described in the magnetometer operating instructions, prior to use at each site.
- The Foerster Ferex Ordnance Locator used must have been factory calibrated within the past year and a factory calibration certificate for the specific instrument being used will be kept in the equipment case. In the case of the Schonstedt GA-52, the instrument being used will be operationally tested by employing it over a known ferrous metal object, simulating a UXO, that has been buried to a depth of one foot.
- The magnetometer will be set up and field calibrated in accordance with the magnetometer operating instructions which will be available for reference on site. The set-up sequence and operational test will be performed each time the instrument is shut off.

3.4.5.3 Surface Debris Removal

Surface debris identified during the site investigations at Site 2 and SSA 4 is comprised of the following:

- Construction/demolition debris (i.e., concrete, brick, wood, scrap metal, plastic sheeting, etc.)
- Fire extinguishers.

All construction/demolition debris will be placed into appropriately-sized roll-off containers using conventional construction equipment. Some hand removal may be required. The fire extinguishers will be depressurized and loaded into the roll-off containers also. Care will be taken during surface debris removal to minimize the amount of soil loaded into the roll-off containers. Various procedures will be utilized to remove soil from the surface debris including shaking, scraping, brooming, wiping, and, if necessary, decontaminating. The surface debris will then be transported to an approved construction/demolition debris landfill for disposal.

3.4.5.4 Railroad Ties

Railroad ties from Sites 2 and 9 will be loaded into a tandem dump truck and transported to the other remedial action contractor currently working at NWS Yorktown for proper reuse and/or disposal. If this is not feasible then the railroad ties will be reused/disposed off site, as appropriate.

3.4.5.5 Drum Removal

Removal of the 51 drums present at Site 2 and SSA 4 will be accomplished utilizing drum handling techniques which are dependent upon the contents of each drum. The desired strategy for drum removal will be to handle drums containing hazardous waste first in order to minimize cross contamination with nonhazardous materials. However, due to the physical location of drums containing hazardous waste, certain drums containing nonhazardous materials may require removal first to gain access. The PPE for hazardous and nonhazardous drummed waste removal are anticipated to be in accordance with Levels B and C, respectively, with the potential to downgrade with proper approval from Level C during nonhazardous drummed waste removal activities.

Prior to handling, each drum will be visually inspected to assess its integrity. At a minimum, this inspection will identify any signs of deterioration such as corrosion, rust, leaks, swelling, or bulging. The drum type and drumhead configuration will also be identified. The size of the drum will also be noted if other than the standard 55-gallon variety. In addition, any required modifications to the drum handling procedures will be discussed and documented at this time.

The following sections detail general drum handling procedures as well as specific removal methods for drums containing hazardous solid waste, nonhazardous solid waste, and empty drums.

General Drum Handling Procedures. Prior to handling any drums, all personnel will be warned about the hazards of drum handling and instructed to minimize unnecessary handling as much as possible. Drums will be handled according to the following procedures to minimize the potential for personal injury and damage to the drums:

- Personnel shall not stand upon or work from drums.

- The initial movement or "breaking" of drums will be performed manually. A worker will break drums by keeping his body close to the drum with shoulders close to the chime (top) height and hands apart. The worker will then drive forward with his legs until the drum breaks from the ground.
- Manual movement of drums will be accomplished by rolling. A worker will roll drums by placing his hands on top of the chime at the 10 o'clock and 2 o'clock positions. Proceeding slowly, the worker will keep his body slightly ahead of the drum and take care not to cross his hands or feet.
- Drums which are stacked directly on top of other drums will first be placed on the ground through use of a drum grapppler attached to a hydraulic excavator or equivalent.

Leaking drums which contain semisolids or sludges and deteriorated drums which cannot be moved without rupture will be placed in overpack containers through the use of a drum grapppler. Plastic sheeting and/or absorbents will be used to minimize waste contact with surface soils.

Hazardous Waste Drum Removal. The first drums to be addressed will be the drums containing hazardous wastes. This includes the drums from group WP-001 as defined in Table 2. The solid drummed hazardous wastes will be overpacked by lifting the drums with a drum grapppler attached to a hydraulic excavator or equivalent and placing them in an overpack with absorbents. If it is determined that the physical condition of the drum will prohibit this activity, plastic sheeting and/or absorbents will be placed on the ground surface and the drum contents will be manually transferred to a new drum. The new drum will then be overpacked, weighed, and taken to the drum handling area by the drum grapppler or loader. The drum weights will be documented and indicated on the overpacks using a permanent marking device for future reference.

The overpacked and staged drums will be placed on pallets in groups of four and banded together. Drums that are comparable in weight and content and have been designated for similar disposal will be placed together on the pallets, if possible. The pallet will then be loaded onto a flatbed truck for transportation to a selected T&D subcontractor's hazardous waste disposal facility(ies). Stacking of drums for transport will not be permitted. Proper health and safety protocols for handling of drums containing hazardous waste will be followed as outlined in the SSHP.

Drums containing used disposable PPE worn during hazardous waste drum removal operations will also be considered hazardous waste and will be placed on a pallet, banded, and shipped as such.

The vehicle routes will be selected based on the following criteria: minimizing vehicle maneuvering (i.e., turning, reversing, etc.), minimizing changes in grades, maximizing sight distance, and minimizing travel distance. The maximum speed for vehicles transporting drums on site will be 15 miles per hour. All off-site transportation for final disposition of wastes will be in accordance with the state of Virginia Department of Transportation regulations.

Nonhazardous Solid Waste Drum Removal. Next, the drums containing nonhazardous solid wastes will be removed. These drums include the WP-002, WP-003, and WP-004 groupings as delineated in Table 2 and the HEPA drums from Site 2. In addition, disposable, used PPE worn during nonhazardous waste drum removal operations will be double-bagged and disposed accordingly.

Before disturbing the drums containing the nonhazardous solid waste, the drums will be inspected. Any liquids present resulting from rainwater will be pumped from the drum and transferred to holding tanks. Each drum is expected to have minimal, if any, rainwater present.

Drummed nonhazardous solid wastes will be consolidated into one waste stream. Each drum will be transferred to the drum handling area. After the drum has been off-loaded from the grapppler onto the steel plate, both ends of the drum will be opened using a bung wrench and open face wrenches to release the band around the lid of the drum. If the band and bolt are rusted and sealed, bolt cutters or a chop saw will be used to free the lid. The chop saw may create sparking; however, no open flame should occur. A nonsparking hammer and chisel may be used to open the drum if the above-mentioned techniques do not work. The drum will then be emptied of its contents which will be placed into a roll-off container for shipment to a permitted sanitary landfill site as nonhazardous waste. The opened drum will then be placed into another roll-off container and crushed. The roll-off containers will be transported off site when full. All off-site transportation for final disposition of the waste will be in accordance with the state of Virginia Department of Transportation regulations.

Empty Drum Removal. Finally, the remaining empty drums scattered over Site 2 and SSA 4 and the empty drums resulting from the consolidation exercises of the wastes will have their ends removed, placed into the roll-off container, and crushed. These drums will then be shipped off site for disposal as nonhazardous waste.

Additional Drum Discoveries. Any additional drums encountered or exposed during removal action operations will be left in place. The NTR will be notified of the drum discovery. The NTR will then discuss the situation with the CO to determine if any action is required. If deemed necessary, the CO will issue a contract modification to remove the drum(s). Unless instructed by the NTR to do otherwise, the drum will be field tested using HAZCAT techniques. The drum will remain undisturbed until the field test results have been reviewed. Once the drummed waste has been characterized, the drum will be removed in accordance with this Removal Action Work Plan.

Subsurface Scan. Upon completion of removal action operations, Sites 2 and 9 and SSA 4 will be scanned using a metal detector to identify any additional buried drums or debris. Additional drum discoveries will be handled as specified in Section 3.4.7.2. This scan will be coordinated with the NTR.

3.4.5.6 Battery Removal

The carbon zinc batteries (Type BA-B09-4-B) at Site 2 will be removed during the performance of the removal actions at Sites 4, 16, and 21 and disposed in accordance with the Removal Action Work Plan for Battery and Drum Removal at Sites 4, 16, and 21, dated February 1994. The small pile of batteries will be removed and loaded in an appropriately-sized roll-off container. The roll-off container will be transported to Site 4 for processing.

3.4.5.7 IT-Generated Waste Removal

If possible, rubbish and debris generated by IT during the removal actions will be removed daily from the sites in a manner that will prevent spillage on NWS Yorktown pavements, streets, or adjacent areas. Materials that cannot be removed daily will be stored in areas specified by the NTR.

3.4.6 Post Removal Sampling and Analysis

Post removal sampling and analysis will be performed for Sites 2 and 9 and SSA 4 in accordance with Section 4.0 of this Removal Action Work Plan.

3.4.7 Site Restoration

As waste removal and post removal sampling is completed, site restoration will be performed as soon as possible to minimize erosion and sedimentation. In particular, the embankments at Site 2 will be restored in phases utilizing this approach since these areas are highly susceptible to erosion and sedimentation of nearby Felgates Creek. Activities associated with site restoration will include:

- Placement and compaction of backfill material in the depressions and excavations resulting from waste removal
- Regrading disturbed areas to match surrounding topography
- Revegetation of disturbed areas
- Placement of erosion matting on slopes
- Installation of silt fence along the toe of revegetated slopes and upgradient of streams and drainageways.

Site restoration will be performed as indicated in Figures 1, 2, and 3 implementing the procedures and materials described in the following sections.

3.4.7.1 Backfill Material

All soil material used during site restoration will be reasonably free of debris, roots, wood, scrap material, vegetation, refuse, soft unsound particles and frozen, deleterious, or objectionable materials. The depressions and/or excavations will be backfilled with material from the identified borrow source which has been confirmed to be uncontaminated and meets the geotechnical requirements specified as follows:

- Classified as GC or SC in accordance with ASTM D 2487
- Having a maximum liquid limit and plasticity index of 35 and 12, respectively, in accordance with ASTM D 4318
- Having a maximum of 25 percent by weight passing No. 200 sieve in accordance with ASTM D 1140.

IT may conduct gradation tests on a sample of backfill material taken at the place of production prior to shipment. Samples of the backfill material will be collected for geotechnical testing at a specified frequency or more often as determined by the NTR if variation in gradation is occurring or if the material appears to depart from the specifications. IT will perform any additional tests requested by the NTR. Test results will be forwarded to the NTR within 48 hours of sampling. If tests conducted by IT or the NTR indicate that the backfill material does not meet the specification requirements, backfill material placement will be terminated until corrective measures can be taken. Backfill material which does not conform to the specification requirements and is used during site restoration will be removed and replaced accordingly.

3.4.7.2 Backfill Material Placement and Compaction

Backfill material will be utilized to backfill the depressions and/or excavations up to surrounding grade, as appropriate. Backfill material will be placed in 6-inch-thick, loose, horizontal lifts using conventional construction equipment. The backfill material will be compacted to achieve compaction greater than or equal to 85 percent of the Standard Proctor maximum dry density as determined by ASTM D 698. A small smooth drum compactor or hand-operated vibratory compaction equipment will be used to facilitate compaction operations.

3.4.7.3 Common Fill Placement

Common fill will be used for general site filling. Common fill will consist of approved unclassified material with characteristics required to compact to the soil density specified for the intended location. Common fill will be placed in 6-inch-thick lifts and compacted with either a small smooth drum compactor or manually using compaction equipment (i.e., tamper, etc.). Material which has become excessively moistened by rain will be aerated to a satisfactory moisture content. All areas will be finish graded to a smooth surface by blading

and/or rolling with a smooth drum roller compactor or equivalent. IT will determine the in-place density of the existing subgrade and if the required density exists then no compaction will be required. Otherwise, the general site areas designated for vegetation will be compacted to 85 percent of the Standard Proctor maximum dry density as determined by ASTM D 698.

3.4.7.4 Topsoil Placement and Final Grading

As appropriate, a minimum of 4 inches of topsoil will be placed over backfill material to bring disturbed areas up to finished grade. Topsoil will consist of natural, friable, soil representative of productive, well-drained soils in the area and is free of subsoil, stumps, rocks larger than 1 inch, brush, weeds, toxic substances and other material detrimental to plant growth. The imported topsoil will be amended, as necessary, with lime to obtain a pH between the range of 5.5 to 7. All disturbed areas will be finish-graded to match surrounding topography and to provide positive surface water drainage. Existing grades which have been disturbed during removal action operations will be graded as directed by the NTR.

3.4.7.5 Revegetation

Disturbed areas to be seeded will be scarified to loosen the upper 3 inches of soil. Revegetation will be performed using hydroseeding techniques. The hydroseed equipment will have a built-in-agitation system and operating capacity sufficient to agitate, suspend, and homogeneously mix a slurry containing not less than 40 pounds of mulch, and a combined total of 7 pounds of fertilizer solids for each 100 gallons of water. Revegetation will not be conducted when the NTR determines that conditions are unfavorable. The seed used will be consistent with existing vegetation and will be placed at a rate of 5 pounds per 1,000 square feet. Fertilizer consisting of FS-0-241, Type I, Class 2, 10-10-10 analysis will be spread at a rate of 25 pounds per 1,000 square feet. The topsoil will also be enriched with application of commercial agricultural limestone of 94-80-14 analysis at a rate of 70 pounds per 1,000 square feet. After the areas are hydroseeded, a hydromulch with tackifier (American Excelsior Company fibermulch or equivalent) will be placed using the hydroseed equipment. The hydromulch will assist in the germination of seed and minimize erosion. The mulch will be free of pitch, tar, resin, chemical additives, or weed seeds.

3.4.7.6 Protection of Surfaces

After hydroseeding all disturbed areas, a hydromulch with tackifier (i.e., American Excelsior Company fibermulch or equivalent) will be placed using the hydroseed equipment. Mulch will be placed on all areas which have been seeded. The hydromulch will assist in the germination of seed and minimize erosion. The mulch will be free of pitch, tar, resin, chemical additives, or weed seeds.

Erosion control blankets (Curlex American Excelsior Company, or equivalent) will then be placed on slopes of 3 feet horizontal to 1 foot vertical (3H:1V) or steeper. The blankets will be installed and anchored in accordance with manufacturer's guidelines. The slopes will be smooth and free of debris to provide proper contact with the soil. The blankets will be installed at least 3 feet above the slope crest and extend a minimum of 2 feet beyond the toe of slope.

The above mentioned soil stabilization techniques will be employed directly after waste removal operations at Sites 9 and SSA4 as part of site restoration whereas every 100 linear feet of embankment at Site 2 will be restored during removal action performance. Each area will be regraded, revegetated, and stabilized (slopes only) using erosion control matting. All newly restored areas will be protected, as necessary, from traffic, erosion, and settlement that may occur. IT will repair or reestablish damaged areas accordingly.

3.4.7.7 Protection of Existing Streams and Drainageways

The existing streams and drainageways at Sites 2 and 9 and SSA4 will be protected during and after removal action performance. Silt fence will be installed as specified in Section 3.4.4.3 along the toe of revegetated slopes and downgradient of all disturbed areas to prevent soil and sediment from being washed into the existing streams and drainageways.

3.4.7.8 Wetlands Restoration

IT does not anticipate wetlands restoration will be required during performance of the removal actions at Sites 2 and 9 and SSA 4. However, in the event that wetlands restoration is necessary, the associated work activities will be performed in accordance with Specifications Section 02950, Wetlands Area, Shrubs, and Grass.

3.4.8 Transportation and Disposal of Waste

The removal actions at Sites 2 and 9 and SSA 4 will generate basically two types of waste, including:

- Government generated waste which will include solid wastes consisting of mine casings, drums, batteries, tires, scrap metal, and other debris existing at the sites.
- IT generated wastes resulting from materials which become contaminated and other wastes resulting from removal action activities.

IT will furnish all labor, materials, and equipment necessary to transport and dispose of all waste material in accordance with applicable federal, state, and local requirements.

3.4.8.1 Temporary Storage of Contaminated Materials

IT will schedule and control the work so as to minimize the quantity of contaminated materials and the duration of on-site storage. Contaminated materials stored on site will be stored in covered containers designed to contain such materials without spillage. Any damage or contamination caused by contaminated material storage will be repaired or removed to the satisfaction of the NTR.

3.4.8.2 Transportation and Disposal

IT will be solely responsible for complying with all federal, state, and local requirements for transporting hazardous materials through the applicable jurisdictions and will bear all responsibility and cost for any noncompliance. In addition, IT will:

- Inspect and document all vehicles and containers for proper operation and covering
- Inspect all vehicles and containers for proper markings, manifest documents, and other requirements for waste shipment
- Perform and document decontamination procedures prior to leaving the work site and again before leaving the disposal site.

Transportation of waste materials will be accomplished using containers or tanks approved by the U.S. Department of Transportation (DOT) for containment and transportation. All roll-off containers and holding tanks will be transported to and from the site by the T&D

subcontractor. The hazardous wastes will be manifested and documented in accordance with all applicable regulations and then sent to the selected T&D subcontractor's hazardous waste disposal facility(ies).

Care will be taken not to overload the transport vehicles thereby minimizing the potential for tipping. Adequate road surfaces will be provided for transport. The vehicle routes will be selected based on the following criteria: minimizing vehicle maneuvering (i.e., turning, reversing, etc.), minimizing changes in grades, maximizing sight distance, and minimizing travel distance. The maximum speed for vehicles transporting waste on site will be 15 miles per hour. All off-site transportation for final disposition of the waste will be in accordance with VDOT regulations.

3.4.8.3 Documentation

IT will originate, use, and maintain the waste shipment records/manifests as required by RCRA and DOT. IT will submit to distribution three copies of the waste shipment/manifests. IT will complete manifest forms for signature by the NTR.

IT will also provide the Navy's Environmental Coordinator with the following decontamination, transportation, and disposal documentation:

- Verification that the proposed disposal site is permitted to accept the contaminated materials specified prior to the start of excavation
- Copies of manifests and other documentation required for shipment of waste materials within 24 hours after removal of waste from the site
- Verification that all vehicles and containers were decontaminated prior to leaving the work site, were properly operating, and were covered within 24 hours after removal of waste from the site
- Verification that the wastes were actually delivered and disposed of at the proposed disposal site within 30 days of disposal
- Verification that all vehicles and containers were decontaminated prior to leaving the disposal site within 7 days of disposal.

3.4.9 Demobilization Activities

Upon removal of all the drums from the site, IT will begin demobilization activities. These activities will include:

- Decontamination of all equipment
- Removal of site delineation flagging and decontamination facilities
- Testing of decontamination fluids to determine proper disposal
- Disposal of decontamination fluids
- Disposal of drummed waste, used PPE, and other contaminated materials in accordance with this Removal Action Work Plan
- Removal of site facilities except for the site access road so that it may be used in subsequent site activities.

3.4.10 Closeout Report

IT will prepare draft and final versions of the closeout report documenting the drum removal action. The report will be prepared in accordance with the Code of Federal Regulations, National Contingency Plan (NCP), Section 300.165 as provided in Appendix G. The closure report will include at a minimum:

- Introduction
- Narrative of removal actions performed at Sites 2 and 9 and SSA 4
- Final safety and health report
- QC Summary Report
- Field documentation
- Field changes and contract modifications
- Chemical and geotechnical testing data
- Off-site disposition of materials documentation.

4.0 Sampling and Analysis

4.1 Sample Labeling and Numbering System

Sample container labels will be prepared prior to collection of each sample. Information on the sample labels will include the project name and number, sample identification, collector's name, date, sample type, preservative, and other necessary information. Each label will be completed using indelible ink or marker. Each sample will be assigned a unique alphanumeric identification that describes where the sample was located. All samples will be visually inspected and a detailed sample collection log will be maintained to document pertinent sample information.

Sample identifications will include the site identification number, sample type, and sample number. Examples of the sample types are as follows:

- BM - Borrow material samples
- SS - Surface soil samples
- WS - Water samples
- SF - Sediment fence deposits samples
- TB - Trip blank
- FB - Field/equipment blank
- FD - Field duplicate.

The following are examples of identification numbers:

- 00-BM-001
Borrow material sample (no site number) - sample number 1
- 02-SS-003
Site 2 - surface soil sample - sample number 3.

4.2 Sample Collection and Analysis

The sampling and analysis program for each type of sample is described below. A summary of the program is presented in Table 3.

4.2.1 Borrow Material Samples

One composite sample will be collected from the selected borrow source prior to construction activities to verify that the material does not contain hazardous levels of constituents listed

under the RCRA or TSCA. This sample will be representative of the entire borrow area. Samples to be composited will be collected using a hand shovel or a stainless steel hand auger, as required.

Soil samples will be analyzed for the following parameters with a 5-day turnaround time as shown in Table 4:

- Ignitability
- Corrosivity
- Reactivity
- Toxicity Characteristics Leaching Procedure
 - Volatile organics
 - Semivolatile organics
 - Pesticides
 - Herbicides
 - Metals
- PCBs
- Total petroleum hydrocarbons.

The soil will also be tested for the following geotechnical properties:

- Sieve analysis of fine and coarse aggregates (ASTM C 136)
- Moisture-density relations of soils and soil-aggregate mixtures (ASTM D 698)
- Material finer than No. 200 sieve (ASTM D 1140)
- Classification of soils for engineering purposes (ASTM D 2487)
- Liquid limit, plastic limit, and plasticity index of soils (ASTM D 4318).

4.2.2 Surface Soil Samples

Surface soil contamination will be determined for the remaining soils at Sites 2 and 9 and SSA 4. The sampling program will consist of collecting 54 composite surface (zero- to 12-inch depth) soil samples at Sites 2 and 9 and 10 composite surface (zero- to 6-inch depth) soil samples at SSA4 as detailed in Table 5. The exact locations of the surface soil samples will be field determined and field referenced using pin flags. The pin flags will be surveyed by Miller-Stephenson, P.C. to document the exact elevation and location of the sample. Sample locations will also be denoted on the as-built drawings for the site. Surface soil samples will be collected using a stainless steel hand shovel that will be decontaminated between sample locations. The number of samples collected from each site is summarized as follows:

- Site 2 - 48 surface (zero to 12 inches) soil samples
- Site 9 - 6 surface (zero to 12 inches) soil samples
- SSA 4 - 10 surface (zero to 6 inches) soil samples.

All of these soil samples will be analyzed for Target Compound List (TCL) parameters according to Contract Laboratory Program (CLP) requirements and methodology as well as other parameters presented in Table 5. The analytical program design will be Level D NEESA (equivalent to Level IV EPA) with information contained for 100 percent validation by an independent party.

4.2.3 Water Samples

The water collected from the excavations in Sites 2 and 9 and SSA 4 will be transferred to a temporary holding tank (frac tank or equivalent) and commingled with decontamination water from the sites. One sample will be collected from each tank and analyzed to determine if the water quality meets the Virginia National Pollutant Discharge Elimination System (NPDES) discharge limits or the Hampton Road Sanitation District (HRSD) discharge limits. The samples will be collected from the top manway of each frac tank using a dedicated Teflon® bailer; however, if sample collection valves are present, these will be used.

A summary of the analytical program for the water samples is presented in Table 6.

4.2.4 Sediment Fence Deposit Samples

Material deposits removed from the sediment fence will be placed in a roll-off bin. A sample from the bin will be collected with a hand shovel prior to disposal of the sediments. The following analyses will be performed on the sample:

- Ignitability
- Corrosivity
- Reactivity
- Complete TCLP
- PCBs
- Total petroleum hydrocarbons.

A summary of the analytical program for the sediment fence deposits is presented in Table 7.

4.3 Decontamination Procedures

Cross contamination will be minimized during sample collection by:

- Requiring each sampler to wear new, clean latex and/or nitrile gloves between sample locations.
- Decontaminating the sampling equipment between sample locations using the following procedure:
 - Wash equipment thoroughly with a laboratory detergent (Alconox, Sparkleen, or Liquinox) and mixed with tap water using a brush to dislodge particulate matter or surface film. The brush will be rinsed with tap water before replacing in the soap bucket.
 - Rinse equipment thoroughly with tap water.
 - Rinse equipment thoroughly with distilled water. This rinse will consist of dispensing distilled water over equipment via pouring or spraying, allowing approximately 30 seconds to drain, and then rinsing again.
- If severe contamination is present, clean with acetone, allow to air dry, and follow with a triple rinse of distilled water.

Collect all decontamination fluids and combine with other decontamination fluids generated on site for proper testing and disposal.

4.4 Field Documentation

Documentation requirements include the following:

- Field activity daily logs
- Sample collection logs
- Chain-of-custody/request for analysis forms
- Variance and nonconformance reports
- Daily report to inspector
- Daily/weekly work plan.

TABLES

Table 1
Drum Inspection, Testing, and Sampling Information
Mine Casing and Debris Removal
Sites 2 and 9 and Site Screening Area 4
Naval Weapons Station Yorktown
Yorktown, Virginia

Drum ^a No.	Site No.	Waste Composite Sample No.	Waste Matrix Liquid/ Solid	Amount in Drum (Fraction of Full)	Comments
1	SSA 4	—	NA	Empty	5 gallon
2	SSA 4	—	NA	Empty	55 gallon
3	SSA 4	—	NA	Full	55 gallon - dirt and rainwater
4	SSA 4	—	NA	Empty	5 gallon
5	SSA 4	—	NA	Empty	5 gallon
6	SSA 4	—	NA	Filled with leaves	55 gallon
7	SSA 4	WP002	Solid	3/4	30 gallon wax-like substance
8	SSA 4	WP002	Solid	1/2	55 gallon - 1/2 filled with dirt/wax-like substance
9	SSA 4	—	NA	Empty	55 gallon
10	SSA 4	—	NA	Empty	55 gallon
11	SSA 4	—	NA	Full	55 gallon - partially buried - full of dirt
12	SSA 4	—	NA	Full	55 gallon - partially buried - full of dirt
13	SSA 4	—	NA	1/2	55 gallon
14	SSA 4	—	NA	Empty	55 gallon
15	SSA 4	WP002	Solid	1/2	30 gallon - wax-like substance
16	SSA 4	—	NA	Empty	55 gallon
17	SSA 4	—	NA	Empty	55 gallon
18	SSA 4	—	NA	Empty	55 gallon
19	SSA 4	—	NA	1/2	55 gallon - 1/2 full of dirt
20	SSA 4	—	NA	2/3	55 gallon - 2/3 full of dirt
21	SSA 4	WP001	Solid	Small Amount	55 gallon - yellowish solid paint waste
22	SSA 4	—	NA	1/2	55 gallon - leaves and dirt
23	SSA 4	—	NA	Empty	55 gallon
24	SSA 4	—	NA	Empty	55 gallon
25	SSA 4	WP001	Solid	1/2	55 gallon - 1/2 full of dirt and leaves with small amount of white solid paint waste
26	SSA 4	WP001	Solid	1/2	55 gallon - gray solid paint waste
27	SSA 4	—	NA	Full	5 gallon - dirt and leaves
28	SSA 4	—	NA	Full	5 gallon - dirt and leaves
29	SSA 4	WP001	Solid	3/4 of inch	5 gallon - hard paint on bottom
30 ^b	SSA 4	—	NA	1/3	55 gallon - white solid

Table 1
(continued)

Drum ^a No.	Site No.	Waste Composite Sample No.	Waste Matrix Liquid/ Solid	Amount in Drum (Fraction of Full)	Comments
31	SSA 4	—	Solid	1/3	55 gallon - leaves and dirt
32	SSA 4	—	—	Empty	55 gallon - crushed
33	2	WP004	Solid	Empty ^c	55 gallon - intact - fiber material
34	2	WP004	Solid	Full	30 gallon - intact - fiber material
35	2	WP004	Solid	Empty ^c	30 gallon - intact - fiber material
36	2	WP004	Solid	Empty ^c	30 gallon - intact - fiber material
37	2	WP004	Solid	Empty ^c	30 gallon - intact - fiber material
38	2	WP004	Solid	Empty ^c	30 gallon - intact - fiber material
39	2	—	NA	1/2	5 gallon - dirt and leaves
40 ^b	2	—	NA	Full	30 gallon - fiber material
41	2	—	NA	Empty	30 gallon - intact
42	2	WP003	NA	Empty	30 gallon - crushed, trace of tar-like substance
43	2	—	NA	Empty	5 gallon - rusted with holes
44	2	—	NA	Empty	5 gallon - crushed
45	2	WP004	Solid	Full	5 gallon - dirt and fiber material
46	2	—	NA	Empty	5 gallon - crushed
47	2	WP003	NA	Empty ^c	30 gallon - crushed
48	2	WP003	NA	Empty ^c	30 gallon - crushed
49	2	WP003	NA	Empty ^c	55 gallon - crushed
50	2	WP003	Solid	Full	55 gallon - tar-like substance - Southwest Corner
51	2	WP003	NA	Empty ^c	55 gallon - crushed

^aDrums identified by metal tags.

^bTo be investigated further during removal action.

^cMaterial sampled from drums and/or surrounding ground surface.

Table 2
Drum Sample Grouping System
Mine Casing and Debris Removal
Sites 2 and 9 and Site Screening Area 4
Naval Weapons Station Yorktown
Yorktown, Virginia

Drum Sample Grouping	Site	Visual Description	Drums Comprising Sample Grouping
WP-001	SSA 4	Waste paint	21, 25, 26, and 29
WP-002	SSA 4	Wax	7, 8, and 15
WP-003 ^a	2	Tar	42, 47, 48, 49, 50, and 51
WP-004	2	Fiber material	33, 34, 35, 36, 37, 38, and 45

^aMaterial samples from drums and/or surrounding ground surface.

Table 3
Sampling and Analysis Program
Mine Casings and Debris Removal
Sites 2 and 9 and SSA 4 - Naval Weapons Station
Yorktown, Virginia

Sample Type	Number of Samples/Frequency	Analytical Program	Turnaround Time
Borrow material soil samples	1	Ignitability Corrosivity Reactivity Complete TCLP PCB TPH	5 days
Surface soil samples	64	TCL (volatiles, semivolatiles, pesticides/PCBs) TAL Metals	3 weeks
Excavation/Decontamination Water	1/tank	NPDES or HRSD parameters	To be determined
Sediment fence deposits	1	Complete TCLP PCB TPH	3 weeks

Notes: HRSD - Hampton Road Sanitation District
NPDES - National Pollutant Discharge Elimination System
PCB - Polychlorinated biphenyl
TAL - Target analyte list
TCL - Target compound list
TCLP - Toxicity Characteristic Leaching Procedure
TPH - Total petroleum hydrocarbons

Table 4
Analytical Program for Borrow Material Samples
Mine Casings and Debris Removal
Sites 2 and 9 and SSA 4 - Naval Weapons Station
Yorktown, Virginia

Parameter	EPA Method	Quantity of Samples	Laboratory QC Samples		Field QC Water Samples				Total
			Matrix Spike	Matrix Spike Duplicate	Field Duplicate	Field Duplicate	Equipment Blank	Trip Blank	
Ignitability	Chapter 7	1	1	1	1	—	—	—	4
Corrosivity	Chapter 7	1	1	1	1	—	—	—	4
Reactivity	Chapter 7	1	1	1	1	—	—	—	4
Complete TCLP	1311	1	1	1	1	—	—	—	4
• Volatile organics	8240	1	1	1	1	—	—	1	5
• Semivolatile organics	8270	1	1	1	1	—	—	—	4
• Pesticides/PCBs	8150/8080	1	1	1	1	—	—	—	4
• Metals	6010/7470	1	1	1	1	—	—	—	4
PCBs	8080	1	1	1	1	—	—	—	4
TPH	418.1	1	1	1	1	—	—	—	4

Notes: PCB - Polychlorinated biphenyl
TCLP - Toxicity Characteristic Leaching Procedure
TPH - Total petroleum hydrocarbons

Table 5
Analytical Program for Surface Soil Samples
Mine Casings and Debris Removal
Sites 2 and 9 and SSA 4 - Naval Weapons Station
Yorktown, Virginia

Parameter	EPA Method	Quality of Samples	Laboratory QC Samples		Field QC Water Samples				Total
			Matrix Spike	Matrix Spike Duplicate	Field Duplicate	Field Blank	Equipment Blank	Trip Blank	
TCL volatile organics	CLP-SOW	64	4	4	7	1	4	4	88
TCL semivolatile organics	CLP-SOW	64	4	4	7	1	4	—	84
TCL pesticides/PCBs	CLP-SOW	64	4	4	7	1	4	—	84
TAL metals	CLP-SOW	64	4	—	7	1	4	—	80
Nitroexplosives	8330	64	—	—	7	1	4	—	76

Notes: CLP-SOW - Contract Laboratory Program - Statement of Work

TAL - Target analyte list

TCL - Target compound list

PCB - Polychlorinated biphenyl

Table 6
Analytical Program for Excavation/Decontamination Water Samples
Mine Casings and Debris Removal
Sites 2 and 9 and SSA 4 - Naval Weapons Station
Yorktown, Virginia

Parameter	EPA Method	Quality of Samples	Laboratory QC Samples		QC Water Samples				Total
			Matrix Spike	Matrix Spike Duplicate	Field Duplicate	Field Blank	Equipment Blank	Trip Blank	
As required by NPDES/HRSD	As required	1/tank	1	1	1	—	—	1	TBD

Notes: HRSD - Hampton Road Sanitation District
NPDES - National Pollutant Discharge Elimination System
TBD - To be determined

Table 7
Analytical Program for Sediment Fence Deposit Samples
Mine Casings and Debris Removal
Sites 2 and 9 and SSA 4 - Naval Weapons Station
Yorktown, Virginia

Parameter	EPA Method	Quality of Samples	Laboratory QC Samples		Field QC Water Samples				Total
			Matrix Spike	Matrix Spike Duplicate	Field Duplicate	Field Duplicate	Equipment Blank	Trip Blank	
Ignitability	Chapter 7	TBD	1/20 ^a	1/20	1/10 ^b	—	—	—	TBD
Corrosivity	Chapter 7	TBD	1/20	1/20	1/10	—	—	—	TBD
Reactivity	Chapter 7	TBD	1/20	1/20	1/10	—	—	—	TBD
Complete TCLP	1311	TBD	1/20	1/20	1/10				TBD
• Volatile organics	8240	TBD	1/20	1/20	1/10	—	—	—	TBD
• Semivolatile organics	8270	TBD	1/20	1/20	1/10	—	—	—	TBD
• Pesticides/PCBs	8150/8080	TBD	1/20	1/20	1/10	—	—	—	TBD
• Metals	6010/7470	TBD	1/20	1/20	1/10	—	—	—	TBD
PCBs	8080	TBD	1/20	1/20	1/10	—	—	—	TBD
TPH	418.1	TBD	1/20	1/20	1/10	—	—	—	TBD

^a One laboratory QC sample per 20 field samples or sample set

^b One field QC sample per 10 field samples or sample set

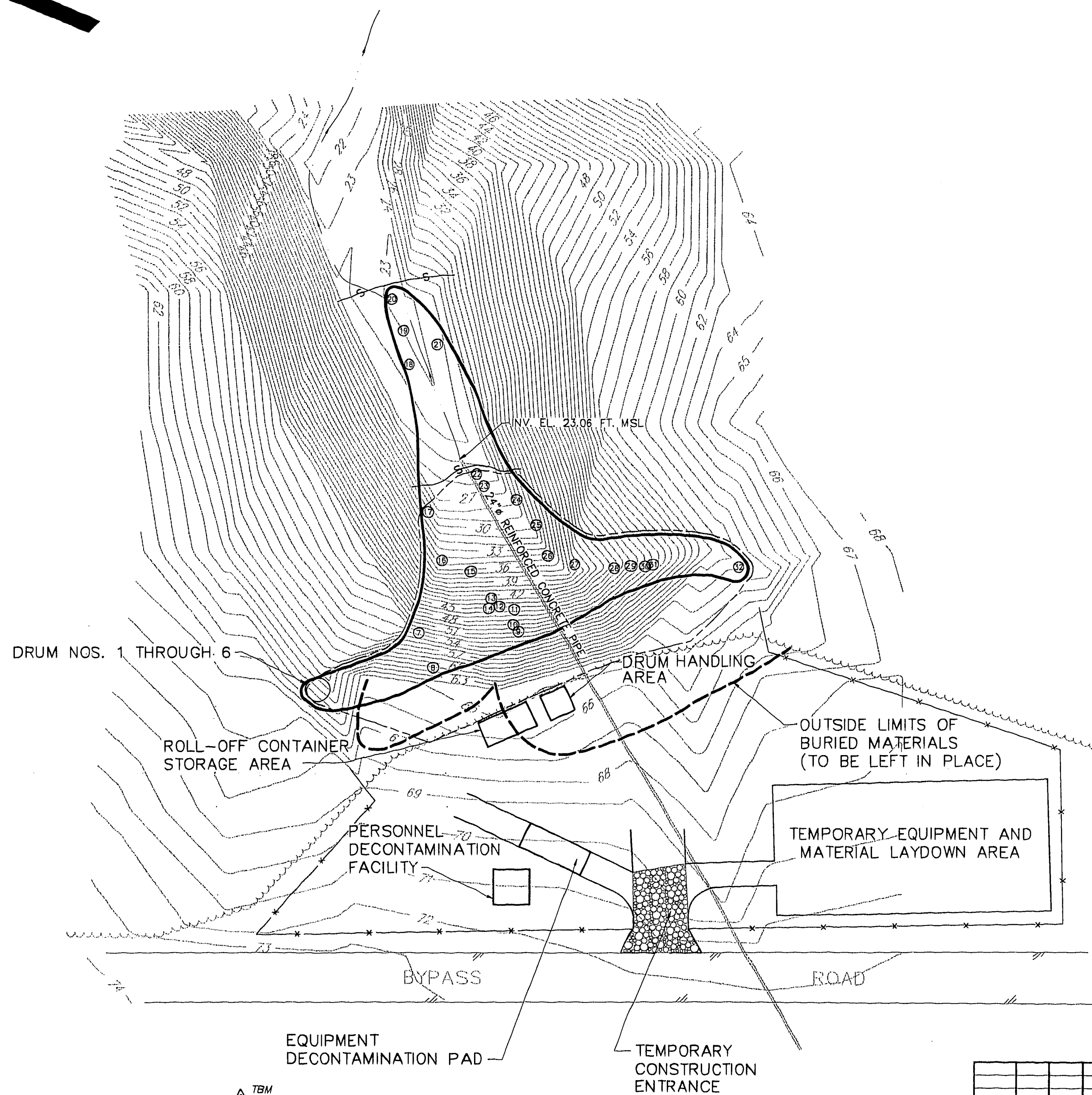
Notes: PCB - Polychlorinated biphenyl

TCLP - Toxicity Characteristic Leaching Procedure

TPH - Total petroleum hydrocarbons

TBD - To be determined

FIGURES



LEGEND:

- 74 --- EXISTING GROUND SURFACE CONTOUR
- △ TBM TEMPORARY BENCH MARK RAILROAD SPIKE IN POWER POLE NO. 25-ELEVATION 73.87 FT. MSL
- WOODS
- EXISTING DRAINAGE PATH WITH FLOW DIRECTION
- ASPHALT ROAD
- ⑧ APPROXIMATE DRUM LOCATION
- APPROXIMATE LIMITS OF BURIED METALLIC OBJECTS
- APPROXIMATE LIMITS OF SURFACE WASTE
- S- PROPOSED SILT FENCE ALIGNMENT
- x- PROPOSED SECURITY FENCE ALIGNMENT
- APPROXIMATE LIMITS OF CLEARING AND GRUBBING

WASTE CHARACTERIZATION INFORMATION		
WASTE STREAM	DRUM I.D. NUMBER(S)	VISUAL DESCRIPTION
WP-001	21, 25, 26, AND 29	WASTE PAINT
WP-002	7, 8, 15	WAX

NOTES:

- COORDINATES ARE BASED ON VIRGINIA STATE PLANE COORDINATE SYSTEM, SOUTH ZONE. ELEVATIONS ARE BASED ON STATION DATUM, WHICH IS 0.69 FEET BELOW THE NATIONAL GEODETIC VERTICAL DATUM (NGVD) OF 1929 (1972 ADJUSTMENT), MSL=0.00.
- CLEAR, GRUB, AND CHIP TREES, BRUSH, AND GRASSES IN AND ADJACENT TO WORK AREAS, ONLY AS NECESSARY. EXISTING WOODS ARE GENERALLY SMALL PINES AND OAKS UP TO 18 INCH DIAMETER WITH SPARSE TO MODERATE UNDERGROWTH, WITH A FEW LARGER TREES UP TO 36 INCH DIAMETER.
- PROVIDE TEMPORARY CONSTRUCTION ENTRANCE WITH 12 INCH DIAMETER, CLASS III REINFORCED CONCRETE STORM DRAIN PIPE AT ALL LOCATIONS WHERE THE CROSSES ROADSIDE DITCHES.
- INSTALL EROSION AND SEDIMENTATION CONTROL MEASURES AS SPECIFIED AT PROPOSED LOCATIONS.
- REMOVE UXO, CONSTRUCTION/DEMOLITION DEBRIS, AND DRUMS AS SPECIFIED IN THE REMOVAL ACTION WORK PLAN.
- DRUM NUMBERS IDENTIFIED BY METAL TAGS. FOR ADDITIONAL DRUM INFORMATION SEE TABLE 1 OF WASTE CHARACTERIZATION AND DISPOSAL REPORT AND REMOVAL ACTION WORK PLAN.
- AS WASTE REMOVAL AND POST REMOVAL SAMPLING ARE COMPLETED, PERFORM SITE RESTORATION TO MINIMIZE EROSION AND SEDIMENTATION. SITE RESTORATION WILL CONSIST OF REGRADING DISTURBED AREAS TO MATCH SURROUNDING TOPOGRAPHY, REVEGETATING DISTURBED AREAS AS SPECIFIED, AND PLACING EROSION MATTING ON SLOPES.

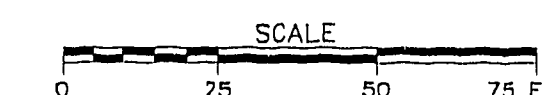


FIGURE 3

NAVAL CONSTRUCTION BATTALION CENTER
NAVAL FACILITIES ENGINEERING COMMAND
PORT HUENEME, CALIFORNIA

TITLE SITE SCREENING AREA 4 REMOVAL ACTION SITE PLAN
WEAPONS CASING DISPOSAL AREA
MINE CASINGS AND DEBRIS REMOVAL
NAVAL WEAPONS STATION YORKTOWN
YORKTOWN, VIRGINIA



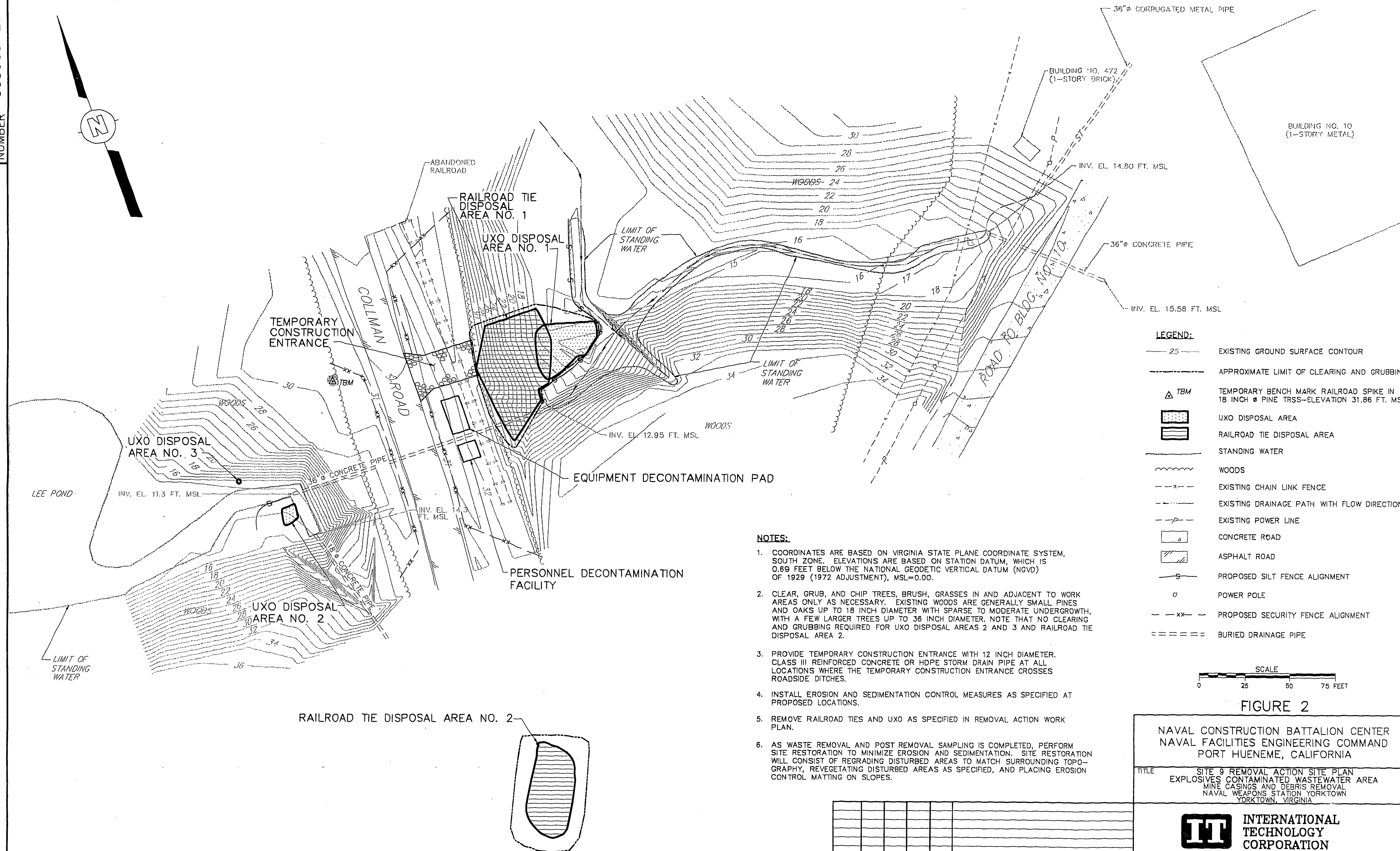
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DESIGNED BY	WAM	CHECKED BY	WAM	4-20-94	SHEET
DRAWN BY	NAM	APPROVED BY	HD	4-20-94	
DATE	19 APRIL 94	DRAWING NO.	305933-E2		

REFERENCE:
SURVEY BY MILLER-STEPHENSON & ASSOCIATES,
P.C. VIRGINIA BEACH, VIRGINIA; MARCH 1994

REVISION	DATE	BY	CHK'D	APR'VD	DESCRIPTION
1	8-21-94	TC	HD		NEW INFORMATION/REVISIONS PER NAVY REVIEW



- NOTES:**
1. COORDINATES ARE BASED ON VIRGINIA STATE PLANE COORDINATE SYSTEM, SOUTH ZONE. ELEVATIONS ARE BASED ON STATION DATUM, WHICH IS 0.69 FEET BELOW THE NATIONAL GEODETIC VERTICAL DATUM (NGVD) OF 1929 (1972 ADJUSTMENT), MSL=0.00.
 2. CLEAR, GRUB, AND CHIP TREES, BRUSH, GRASSES IN AND ADJACENT TO WORK AREAS ONLY AS NECESSARY. EXISTING WOODS ARE GENERALLY SMALL PINES AND OAKS UP TO 18 INCH DIAMETER WITH SPARSE TO MODERATE UNDERGROWTH, WITH A FEW LARGER TREES UP TO 36 INCH DIAMETER. NOTE THAT NO CLEARING AND GRUBBING REQUIRED FOR UXO DISPOSAL AREAS 2 AND 3 AND RAILROAD TIE DISPOSAL AREA 2.
 3. PROVIDE TEMPORARY CONSTRUCTION ENTRANCE WITH 12 INCH DIAMETER. CLASS III REINFORCED CONCRETE OR HDPE STORM DRAIN PIPE AT ALL LOCATIONS WHERE THE TEMPORARY CONSTRUCTION ENTRANCE CROSSES ROADSIDE DITCHES.
 4. INSTALL EROSION AND SEDIMENTATION CONTROL MEASURES AS SPECIFIED AT PROPOSED LOCATIONS.
 5. REMOVE RAILROAD TIES AND UXO AS SPECIFIED IN REMOVAL ACTION WORK PLAN.
 6. AS WASTE REMOVAL AND POST REMOVAL SAMPLING IS COMPLETED, PERFORM SITE RESTORATION TO MINIMIZE EROSION AND SEDIMENTATION. SITE RESTORATION WILL CONSIST OF REGRADING DISTURBED AREAS TO MATCH SURROUNDING TOPOGRAPHY, REVEGETATING DISTURBED AREAS AS SPECIFIED, AND PLACING EROSION CONTROL MATTING ON SLOPES.

- LEGEND:**
- 25 ——— EXISTING GROUND SURFACE CONTOUR
 - APPROXIMATE LIMIT OF CLEARING AND GRUBBING
 - TBM TEMPORARY BENCH MARK RAILROAD SPIKE IN 18 INCH Ø PINE TRSS-ELEVATION 31.86 FT. MSL
 - UXO DISPOSAL AREA
 - RAILROAD TIE DISPOSAL AREA
 - ~~~~~ STANDING WATER
 - WOODS
 - x-x- EXISTING CHAIN LINK FENCE
 - .-.- EXISTING DRAINAGE PATH WITH FLOW DIRECTION
 - p- EXISTING POWER LINE
 - CONCRETE ROAD
 - ASPHALT ROAD
 - s- PROPOSED SILT FENCE ALIGNMENT
 - o POWER POLE
 - xx- PROPOSED SECURITY FENCE ALIGNMENT
 - == == == BURIED DRAINAGE PIPE

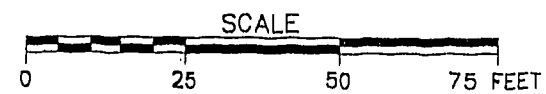


FIGURE 2

NAVAL CONSTRUCTION BATTALION CENTER
NAVAL FACILITIES ENGINEERING COMMAND
PORT HUENEME, CALIFORNIA

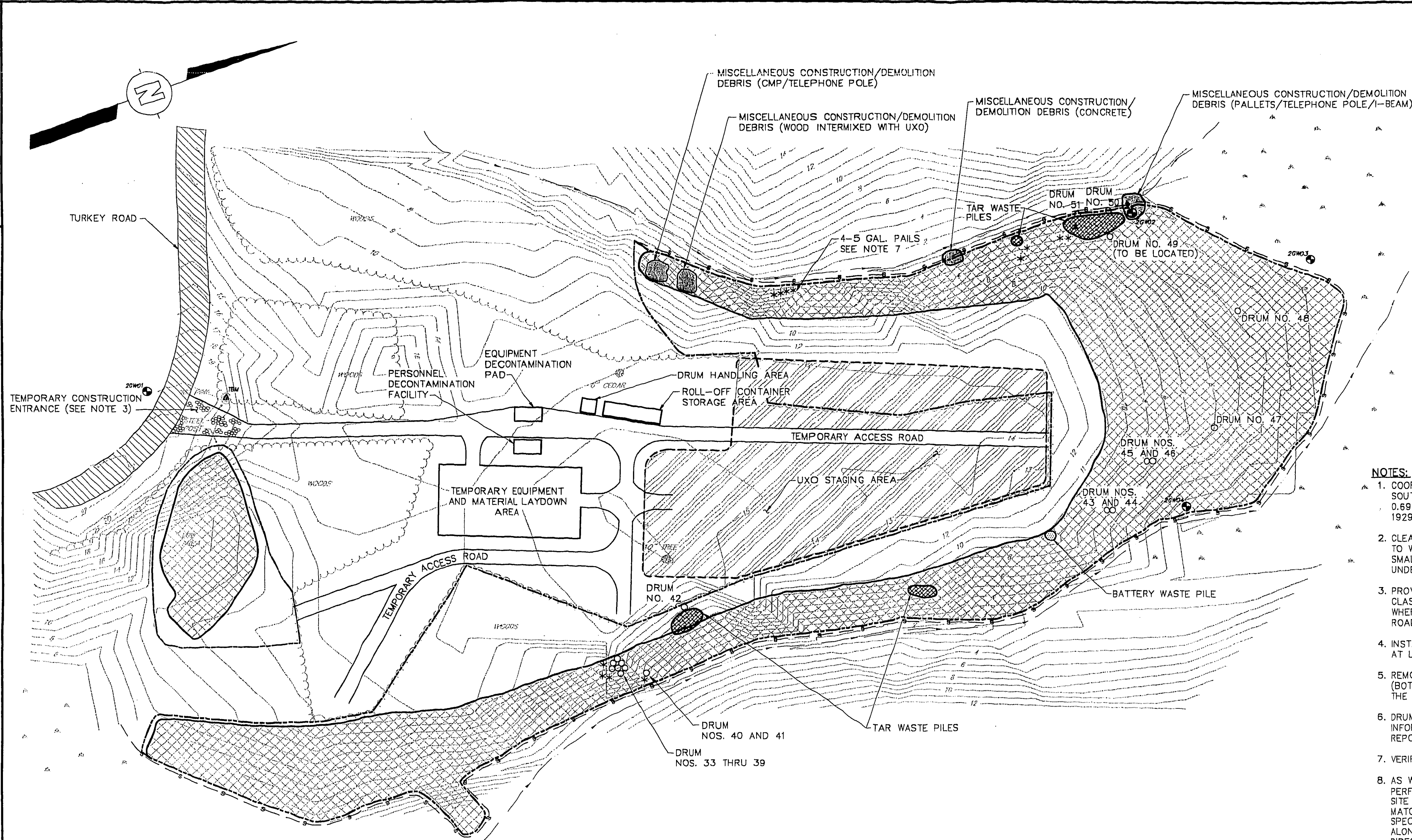
TITLE SITE 9 REMOVAL ACTION SITE PLAN
EXPLOSIVES CONTAMINATED WASTEWATER AREA
MINE CASINGS AND DEBRIS REMOVAL
NAVAL WEAPONS STATION YORKTOWN
YORKTOWN, VIRGINIA

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WASTE CHARACTERIZATION INFORMATION		
WASTE STREAM	DRUM I.D. NUMBER(S)	VISUAL DESCRIPTION
WP-003	42, 47, 48, 49, 50, AND 51	TAR
WP-004	33, 34, 35, 36, 37, 38, AND 45	FIBER MATERIAL

LEGEND:

- ▲ TBM TEMPORARY BENCH MARK, RAILROAD SPIKE IN 18 INCH DIAMETER PINE TREE - ELEVATION 31.86 FT. MSL
- WOODS
- APPROXIMATE LOCATION OF MISCELLANEOUS CONSTRUCTION/DEMOLITION DEBRIS
- APPROXIMATE LIMITS OF WASTE DISPOSAL AREAS
- EXISTING DRAINAGE PATH WITH FLOW DIRECTION
- ASPHALT ROAD
- MARSH
- PROPOSED SILT FENCE ALIGNMENT
- EXISTING GROUND SURFACE CONTOUR
- APPROXIMATE ASPHALT WASTE PILE AREAS
- APPROXIMATE BATTERY WASTE PILE AREA
- UNNUMBERED 5 OR 30 GALLON EMPTY DRUM
- APPROXIMATE DRUM LOCATION
- APPROXIMATE LIMITS OF CLEARING AND GRUBBING

NOTES:

1. COORDINATES ARE BASED ON VIRGINIA STATE PLANE COORDINATE SYSTEM, SOUTH ZONE. ELEVATIONS ARE BASED ON STATION DATUM, WHICH IS 0.69 FEET BELOW THE NATIONAL GEODETIC VERTICAL DATUM (NGVD) OF 1929 (1972 ADJUSTMENT), MSL=0.00.
2. CLEAR, GRUB, AND CHIP TREES, BRUSH, AND GRASSES IN AND ADJACENT TO WORK AREAS, AS NECESSARY. EXISTING WOODS ARE GENERALLY SMALL PINES AND OAKS UP TO 18 INCH DIAMETER WITH SPARSE TO MODERATE UNDERGROWTH, WITH A FEW LARGER TREES UP TO 36 INCH DIAMETER.
3. PROVIDE TEMPORARY CONSTRUCTION ENTRANCE WITH 12 INCH DIAMETER CLASS III REINFORCED CONCRETE STORM DRAIN PIPE AT ALL LOCATIONS WHERE THE TEMPORARY CONSTRUCTION ENTRANCE CROSSES ROADSIDE DITCHES.
4. INSTALL EROSION AND SEDIMENTATION CONTROL MEASURES AS SPECIFIED AT LOCATIONS SHOWN.
5. REMOVE UXO, CONSTRUCTION/DEMOLITION DEBRIS, RAILROAD TIES, DRUMS (BOTH NUMBERED AND UNNUMBERED), AND BATTERIES AS SPECIFIED IN THE REMOVAL ACTION WORK PLAN.
6. DRUM NUMBERS IDENTIFIED BY METAL TAGS. FOR ADDITIONAL DRUM INFORMATION SEE TABLE 1 OF WASTE CHARACTERIZATION AND DISPOSAL REPORT AND REMOVAL ACTION WORK PLAN.
7. VERIFY EMPTY PRIOR TO DISPOSAL.
8. AS WASTE REMOVAL AND POST REMOVAL SAMPLING ARE COMPLETED, PERFORM SITE RESTORATION TO MINIMIZE EROSION AND SEDIMENTATION. SITE RESTORATION WILL CONSIST OF REGRADEING DISTURBED AREAS TO MATCH SURROUNDING TOPOGRAPHY, REVEGETATING DISTURBED AREAS AS SPECIFIED, AND PLACING EROSION MATTING ON SLOPES. UXO DISPOSAL AREAS ALONG EMBANKMENTS ADJACENT TO FELGATES CREEK WILL BE GRADED AS DIRECTED BY THE NAVY TECHNICAL REPRESENTATIVE.

SITE GROUNDWATER MONITORING WELL DATA	
GROUNDWATER MONITORING WELL	TOP OF CASING ELEVATION (FT. MSL)
2GW01	21.74
2GW02	5.42
2GW03	4.30
2GW04	3.59

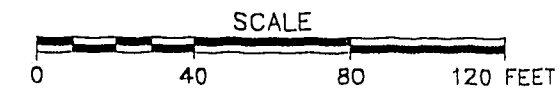


FIGURE 1

NAVAL CONSTRUCTION BATTALION CENTER
NAVAL FACILITIES ENGINEERING COMMAND
PORT HUENEME, CALIFORNIA

TITLE SITE 2 REMOVAL ACTION SITE PLAN
TURKEY ROAD LANDFILL
MINE CASINGS AND DEBRIS REMOVAL
NAVAL WEAPONS STATION YORKTOWN
YORKTOWN, VIRGINIA



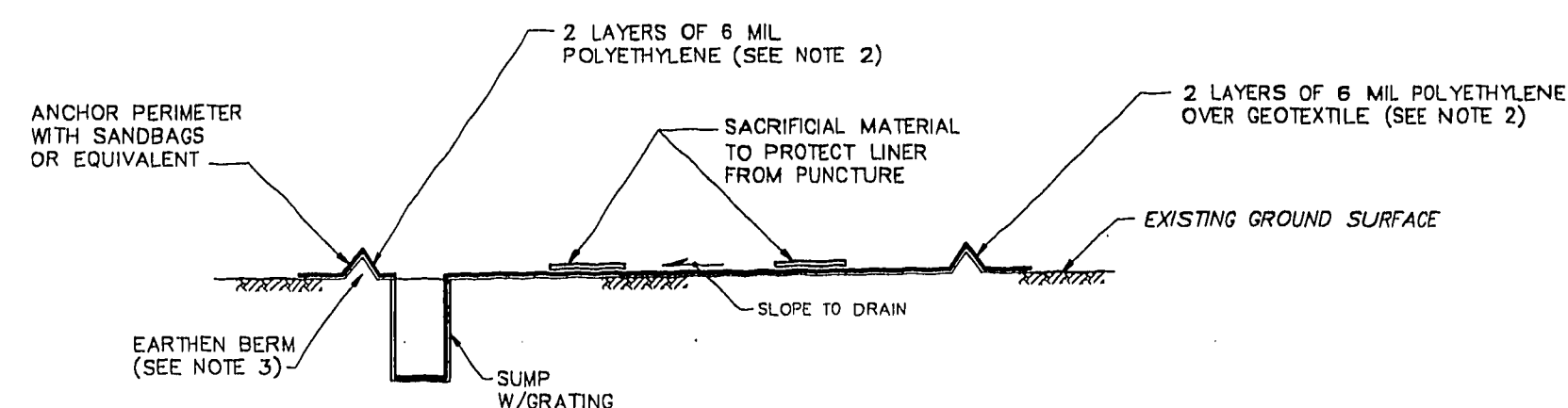
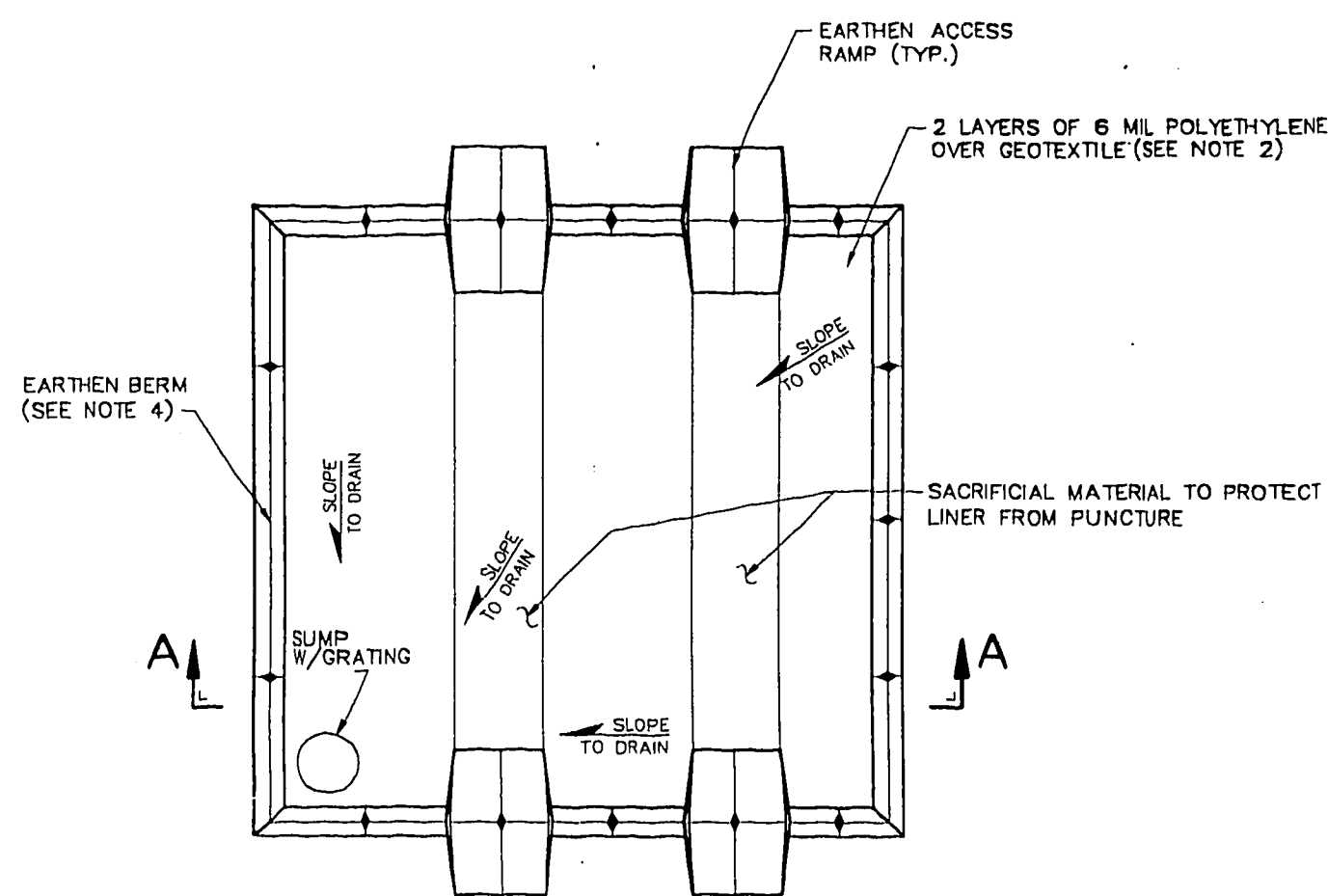
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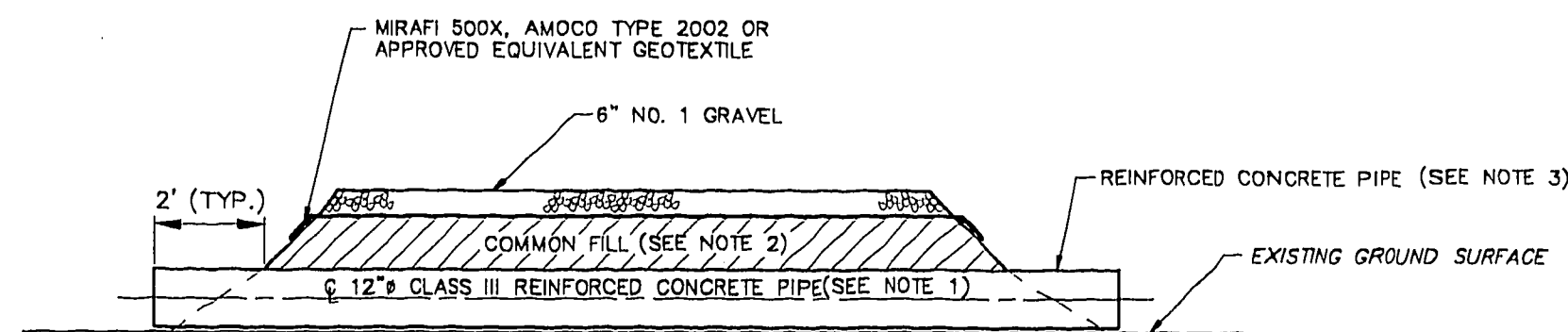
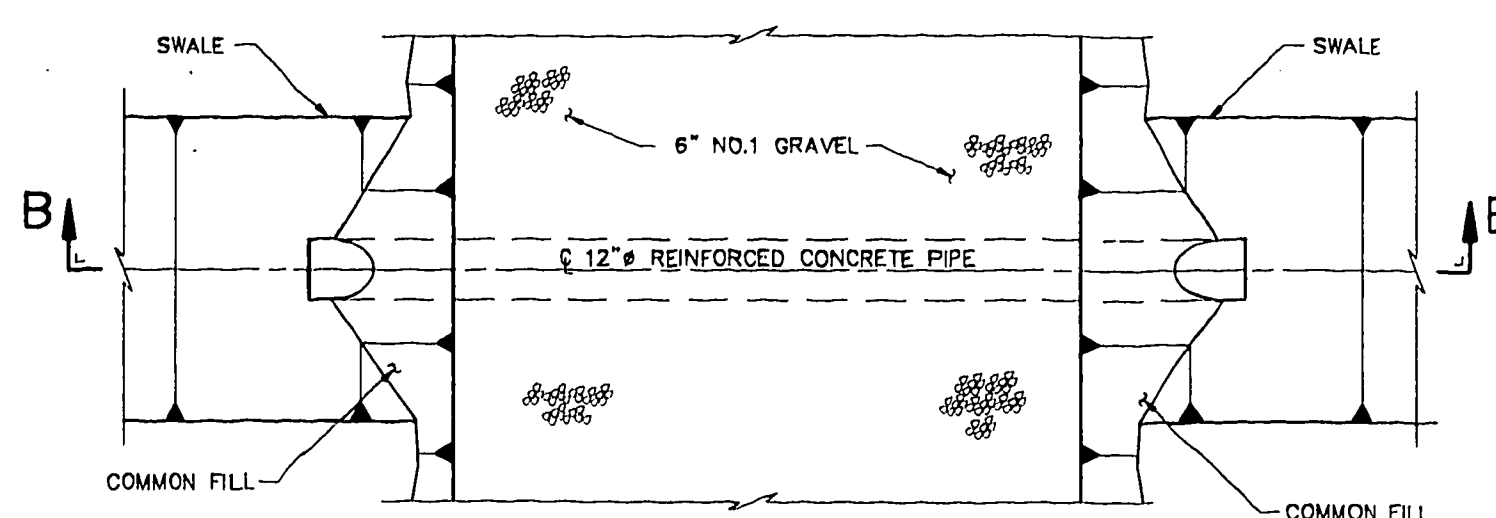
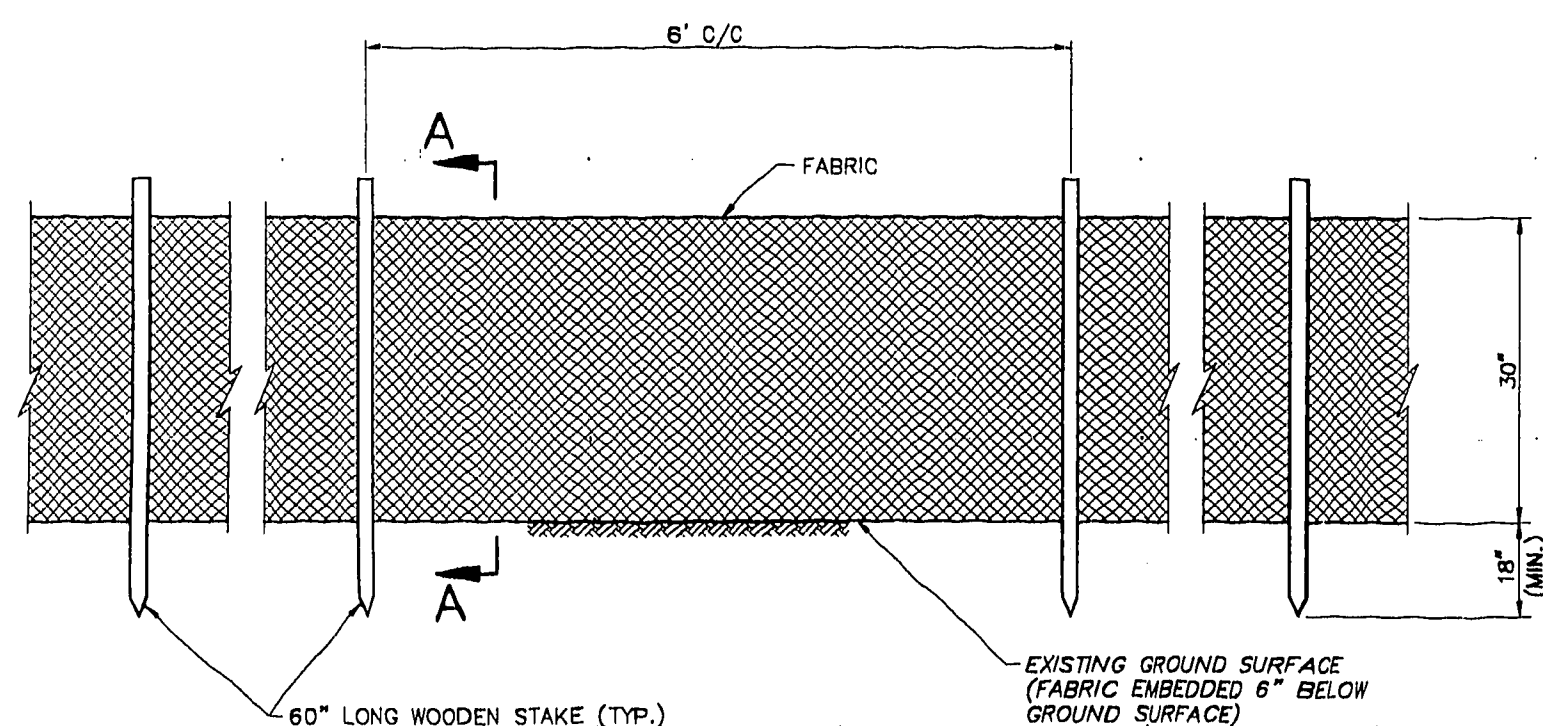
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REFERENCE:
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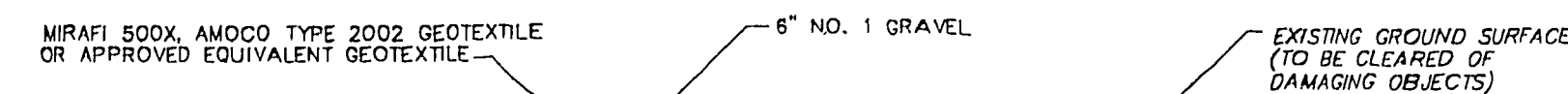
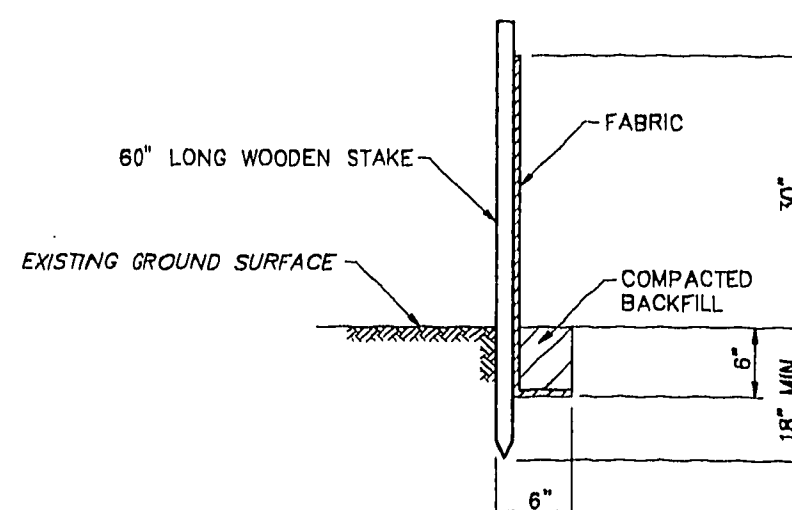
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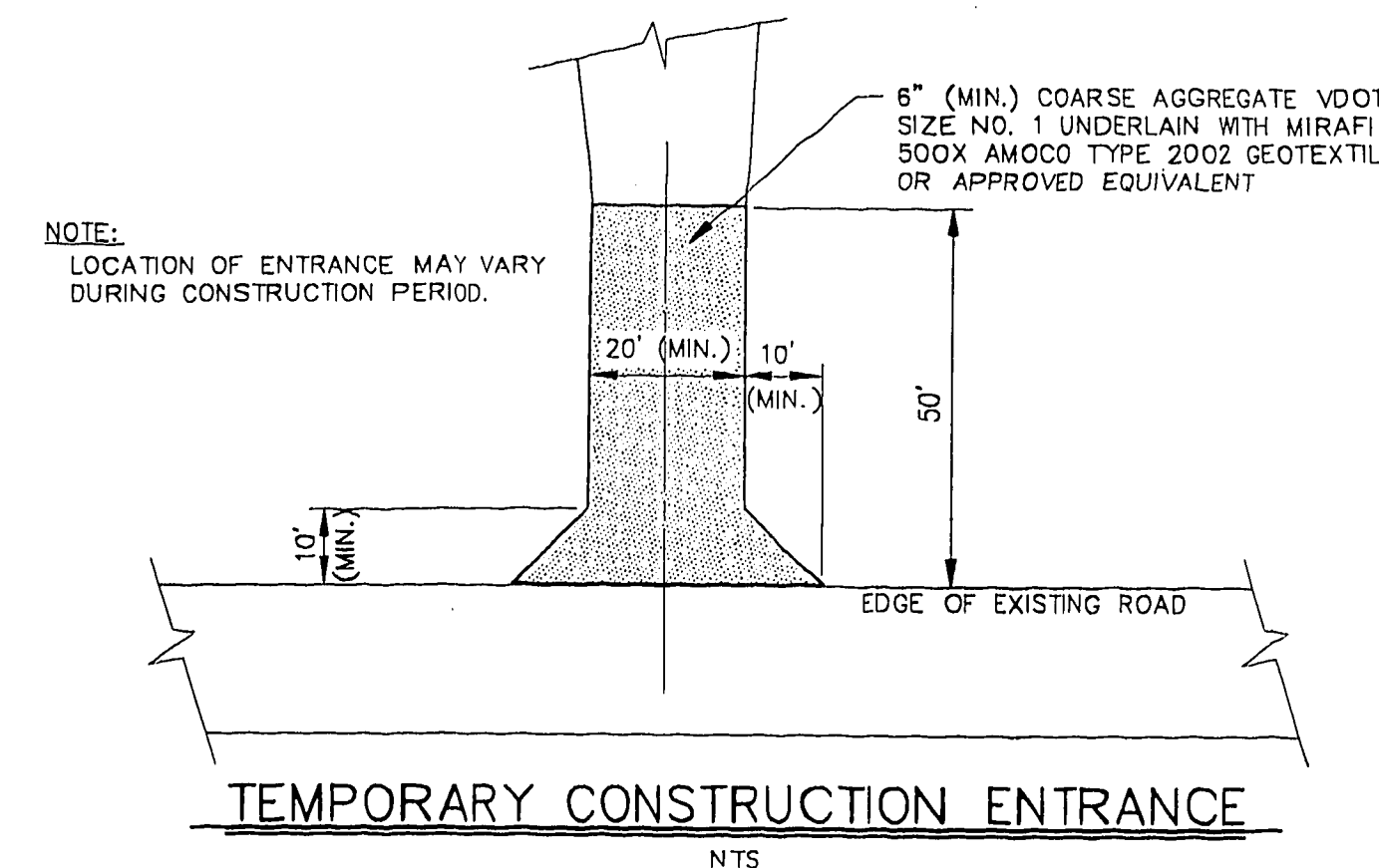
- NOTES:
1. EQUIPMENT DECONTAMINATION PAD TO BE SIZED AS REQUIRED.
 2. A 20 OR 30 MIL PVC GEOMEMBRANE MAY BE SUBSTITUTED IN LIEU OF 6 MIL POLYETHYLENE.
 3. EARTHEN BERM TO HAVE 12" MINIMUM HEIGHT.



- NOTES:
1. AN HDPE CULVERT MAY BE SUBSTITUTED
 2. FILL THICKNESS TO BE FIELD DETERMINED TO MATCH ADJACENT AREAS (MIN. 18").
 3. PIPE LENGTH TO BE FIELD DETERMINED.



NOTE:
ACCESS ROAD SURFACE TO BE APPROXIMATELY 10 FEET WIDE.



GENERAL EROSION AND SEDIMENT CONTROL NOTES

- ES-1 UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK AND VIRGINIA REGULATIONS VR 625-02-00 EROSION AND SEDIMENT CONTROL REGULATIONS.
- ES-2 THE PLAN APPROVING AUTHORITY MUST BE NOTIFIED ONE WEEK PRIOR TO THE PRECONSTRUCTION CONFERENCE, ONE WEEK PRIOR TO THE COMMENCEMENT OF LAND DISTURBING ACTIVITY, AND ONE WEEK PRIOR TO THE FINAL INSPECTION.
- ES-3 ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN CLEARING.
- ES-4 A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN SHALL BE MAINTAINED ON THE SITE AT ALL TIMES.
- ES-5 PRIOR TO COMMENCING LAND DISTURBING ACTIVITIES IN AREAS OTHER THAN INDICATED ON THESE PLANS (INCLUDING, BUT NOT LIMITED TO, OFF-SITE BORROW OR WASTE AREAS), THE CONTRACTOR SHALL SUBMIT A SUPPLEMENTARY EROSION CONTROL PLAN TO THE OWNER FOR REVIEW AND APPROVAL BY THE PLAN APPROVING AUTHORITY.
- ES-6 THE CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF ANY ADDITIONAL EROSION CONTROL MEASURES NECESSARY TO PREVENT EROSION AND SEDIMENTATION AS DETERMINED BY THE PLAN APPROVING AUTHORITY.
- ES-7 ALL DISTURBED AREAS ARE TO DRAIN TO APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING LAND DISTURBING ACTIVITIES AND DURING SITE DEVELOPMENT UNTIL FINAL STABILIZATION IS ACHIEVED.
- ES-8 DURING DEWATERING OPERATIONS, WATER WILL BE PUMPED INTO AN APPROVED FILTERING DEVICE.
- ES-9 THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES PERIODICALLY AND AFTER EACH RUNOFF-PRODUCING RAINFALL EVENT. ANY NECESSARY REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES SHALL BE MADE IMMEDIATELY.

FIGURE 4

NAVAL CONSTRUCTION BATTALION CENTER
NAVAL FACILITIES ENGINEERING COMMAND
PORT HUENEME, CALIFORNIA

TITLE
CONSTRUCTION DETAILS
SITES 2 AND 9 AND SITE SCREENING AREA 4
MINE CASINGS AND DEBRIS REMOVAL
NAVAL WEAPONS STATION, YORKTOWN
YORKTOWN, VIRGINIA



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DATE	21 APRIL 94	DRAWING NO.	305933-E4		

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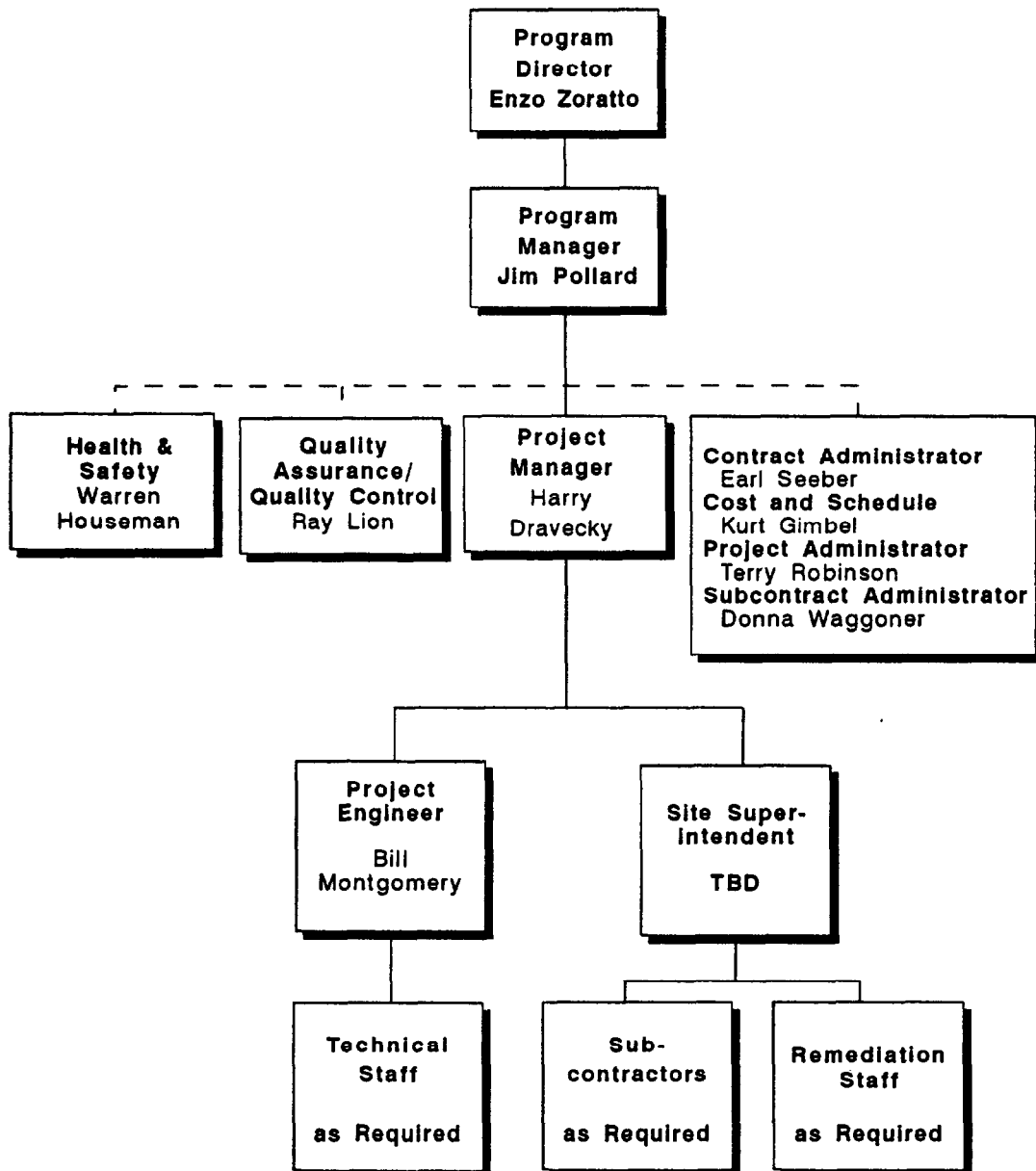


Figure 5
IT Organization Chart
Mine Casings and Debris Removal
Sites 2 and 9 and Site Screening Area 4
Naval Weapons Station Yorktown
Yorktown, Virginia

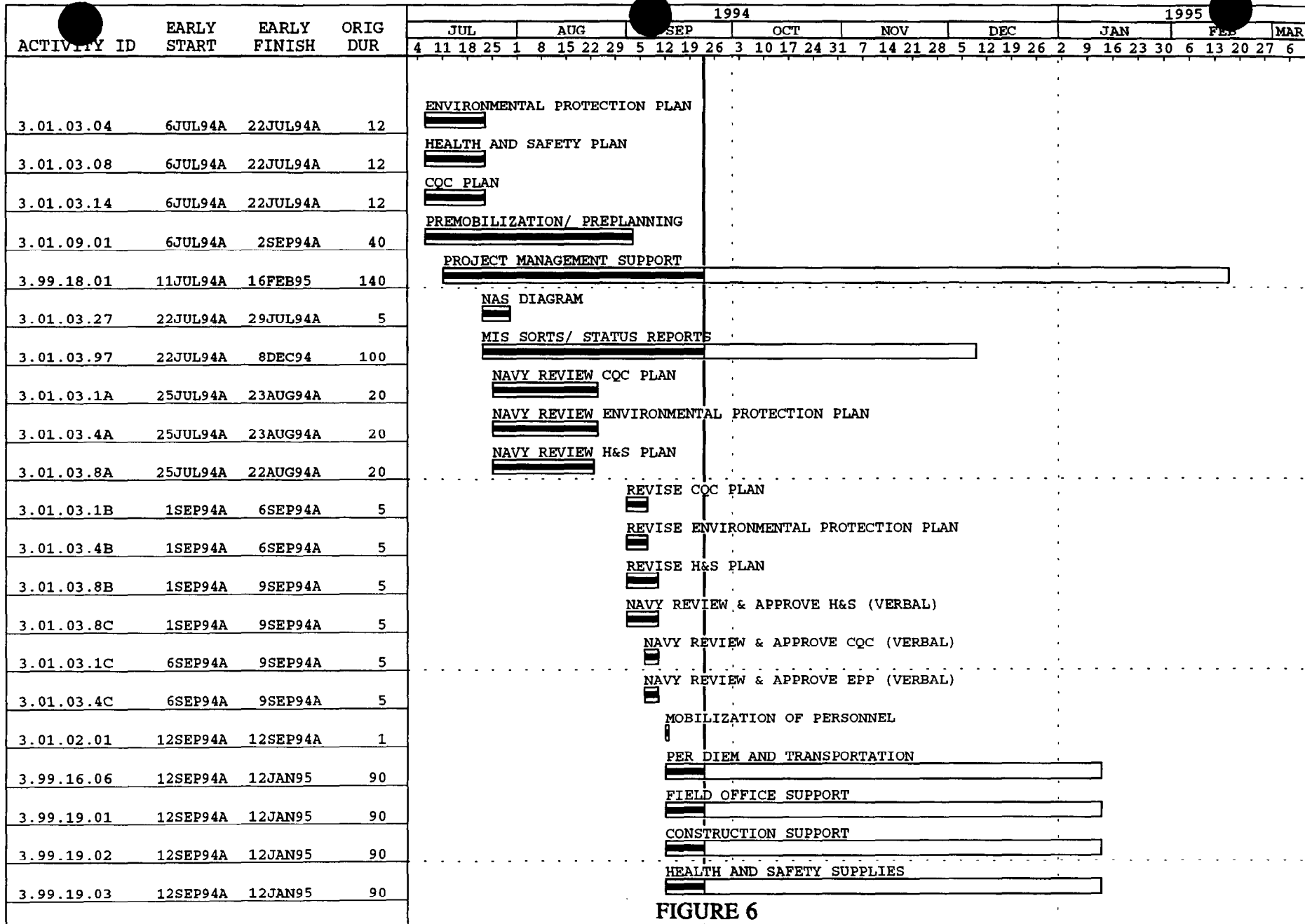


FIGURE 6

Plot Date 28SEP94
Data Date 23SEP94
Project Start 5JUL94
Project Finish 10MAR95

Activity Bar/Early
Critical Activity
Progress Bar
Milestone/Flag activity

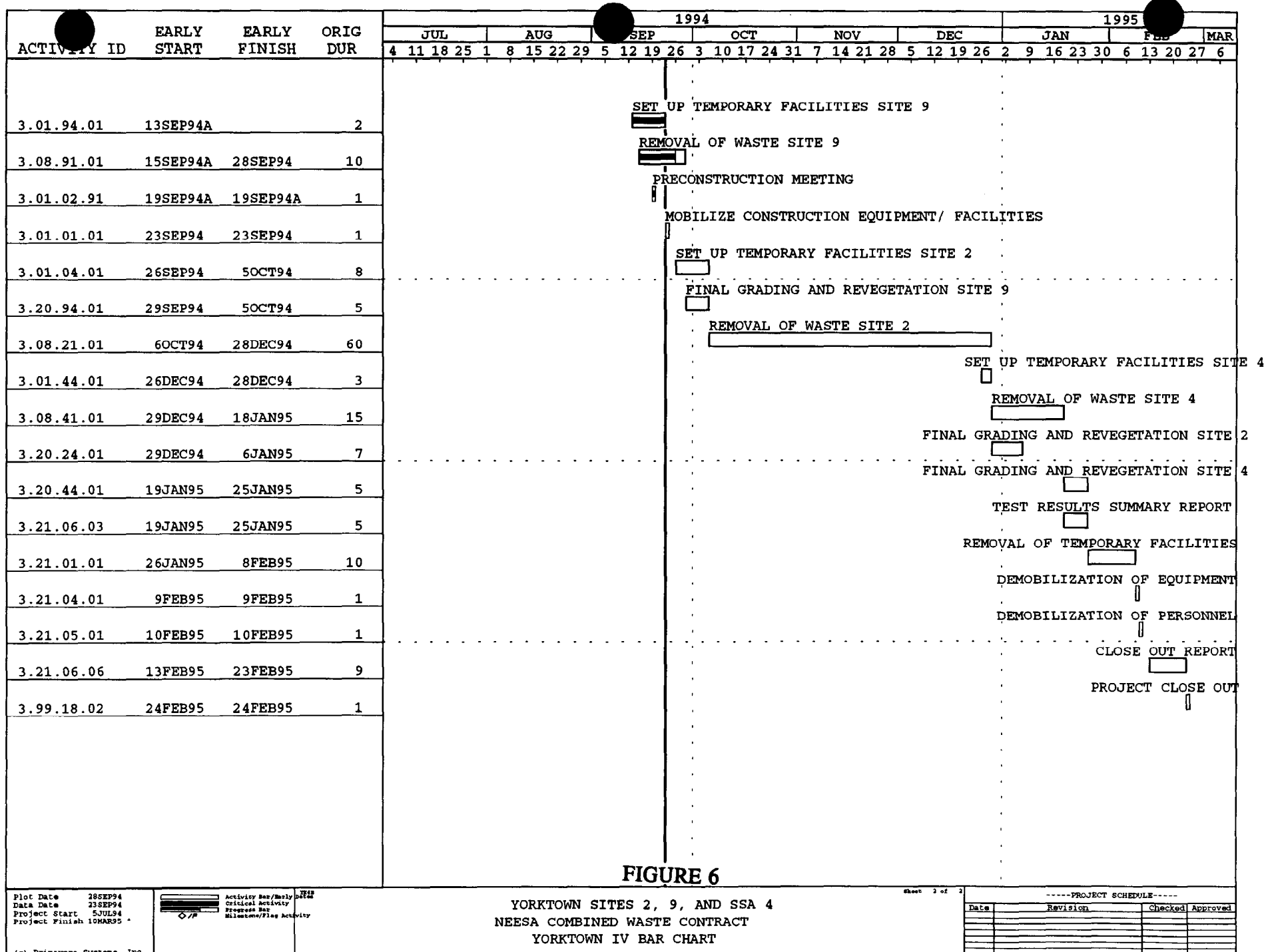
28SEP94

YORKTOWN SITES 2, 9, AND SSA 4
NEESA COMBINED WASTE CONTRACT
YORKTOWN IV BAR CHART

Sheet 1 of 3

-----PROJECT SCHEDULE-----

Date	Revision	Checked	Approved



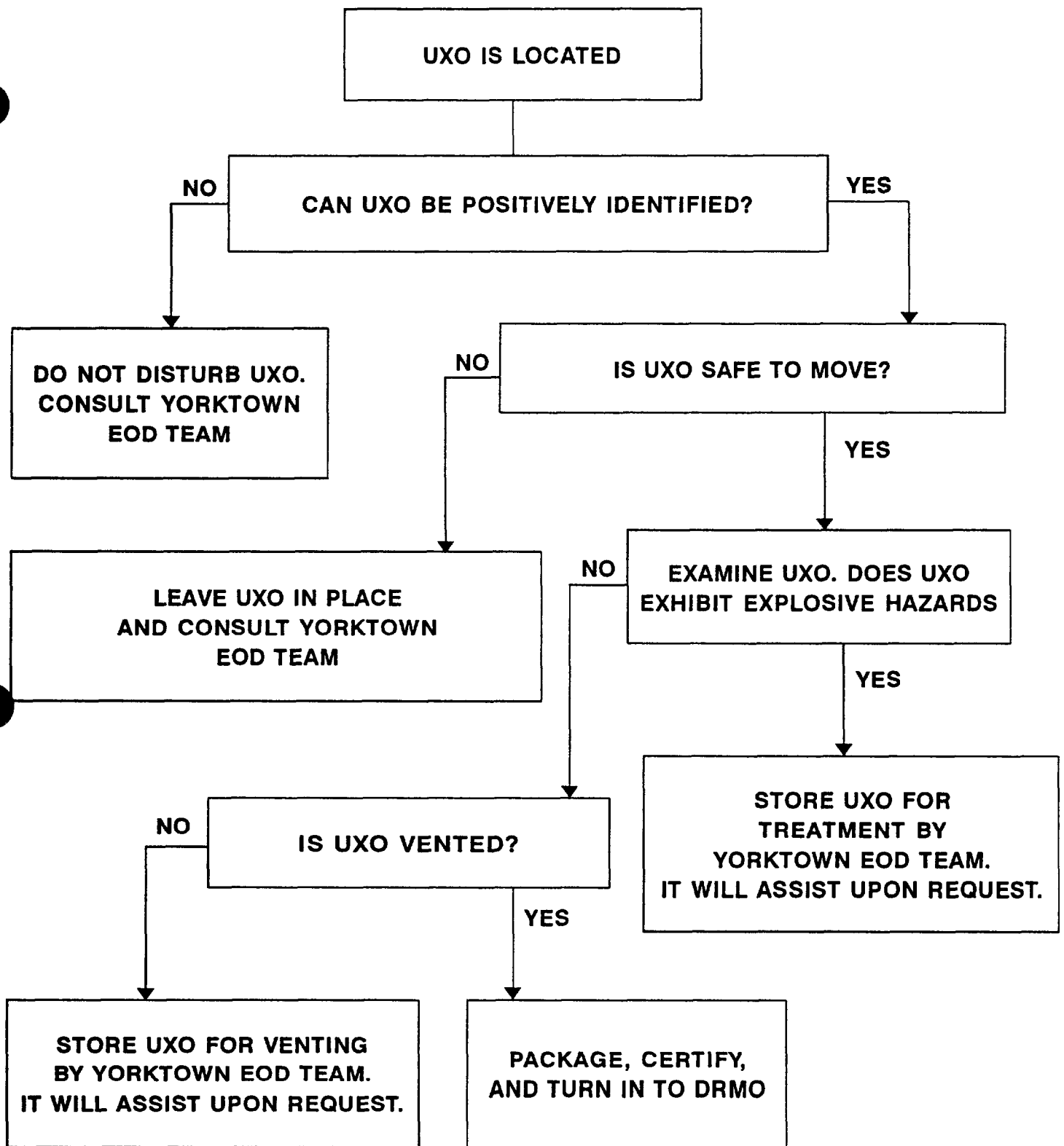


Figure 7
UXO Removal Flow Diagram
Mine Casings and Debris Removal
Sites 2 and 9 and Site Screening Area 4
Naval Weapons Station Yorktown
Yorktown, Virginia

**THE CONTENTS OF THIS
BOX HAVE BEEN INSPECTED AND
ARE CERTIFIED TO CONTAIN
NONEXPLOSIVE ORDNANCE
SCRAP SUITABLE FOR RECYCLING**

**IT Corporation
UXO Supervisor**

Date

Figure 8

**UXO Inert Certification Label
Mine Casings and Debris Removal
Naval Weapons Station Yorktown
Yorktown, Virginia**

APPENDIX A

SITE-SPECIFIC SAFETY AND HEALTH PLAN



**INTERNATIONAL
TECHNOLOGY
CORPORATION**

Project No. 385013
September 1994

Final Plan

Site Safety and Health Plan Combined Hazardous Waste Mine Casings and Debris Removal Sites 2 and 9 and Site Screening Area 4

Naval Weapons Station Yorktown Yorktown, Virginia

Contract No. N47408-92-D-3045
Delivery Order No. 0016

Prepared for:

Naval Construction Battalion Center
Naval Facilities Engineering Command
NAVFAC Contracts Office, Code 2723, Building 90
Port Hueneme, California 93043-5000



Prepared by:

IT Corporation
2790 Mosside Boulevard
Monroeville, Pennsylvania 15146-2792

Site Safety and Health Plan

**Mine Casing and Debris Removal
Sites 2 and 9 and Site Screening Area 4
Naval Weapons Station Yorktown
Yorktown, Virginia**

**Contract No. N47408-92-D-3045
Delivery Order No. 0016**

Prepared for:

**Naval Construction Battalion Center
Naval Facilities Engineering Command
NAVFAC Contracts Office, Code 27233, Building 90
Port Hueneme, California 93043-5000**

Prepared by:

**IT CORPORATION
2790 Mosside Boulevard
Monroeville, Pennsylvania 15146**

**September 1994
IT Project No. 385013**

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List of Acronyms

ABCs	airway, breathing, and circulation
ABIH	American Board of Industrial Hygiene
ACGIH	American Conference of Governmental Industrial Hygienists
AHA	Activity Hazard Analysis
ANSI	American National Standards Institute
APR	air purifying respirator
CBC	Complete blood count
CFR	Code of Federal Regulations
CGI	combustible gas indicator
COTR	Contracting Officer Technical Representative
CPR	cardiopulmonary resuscitation
CrVI	Hexavalent chromium
CRZ	contamination reduction zone
dBA	decibel A-scale
DCE	1,2-Dichloroethene
DNT	2,4- and 2,6-Dinitrotoluene
DOT	Department of Transportation
EED	electronic explosive devices
EOD	explosive ordnance disposal
EPA	U. S. Environmental Protection Agency
EZ	exclusion zones
FM	Factory Mutual
GFCI	ground fault circuit interrupters
HEPA	high efficiency particulate air
IDLH	Immediately Dangerous to Life and Health
IT	IT Corporation
LEL	Lower Explosive Limit
MEK	Methyl Ethyl Ketone
MSDS	Material Safety Data Sheets
MSHA	Mine Safety and Health Agency
NIOSH	National Institute for Occupational Safety and Health
NRR	Noise Reduction Rating
NWS	Naval Weapons Station
OJTR	On-The-Job Training Record
OSHA	Occupational Safety and Health Administration
PAHs	Polynuclear Aromatic Hydrocarbons
PCB	polychlorinated biphenyls
PEL	Permissible Exposure Limit
PID	Photoionization Detector
PM	Project Manager
PPE	personnel protective equipment
ppm	parts per million
PZ	piezoelectric
RAWP	Removal Action Work Plan
RDX	Cyclonite
RPM	Remedial Project Manager
SCBA	Self-Contained Breathing Apparatus

List of Acronyms

SHM	Safety and Health Manager
SMAC	Sequential Multiple Analyzer Computer
SS	Site Superintendent
SSA	Site Screening Area
SSHC	Site Safety and Health Coordinator
SSHP	Site Safety and Health Plan
SZ	support zone
TCE	trichloroethene
TLV	Threshold Limit Values
TNT	2,4,6-Trinitrotoluene
TWA	time-weighted average
UL	Underwriters Laboratories
USN	United States Navy
UXO	unexploded ordnance
VOC	Volatile Organic Compound
WBGT	Wet Bulb Globe Temperature

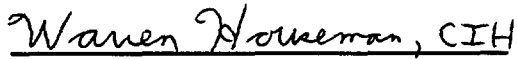
**Mine Casing and Debris Removal
Sites 2 and 9 and Site Screening Area 4
Site Safety and Health Plan Approvals**

I have read and approved this SSHP with respect to project hazards, regulatory requirements, and IT procedures.



**Harry Dravecky, P.E.
Project Manager**

9/22/94
Date



**Warren Houseman, CIH
Safety & Health Manager**

9/22/94
Date

SSHP ACKNOWLEDGEMENT FORM

I have been informed of, and will abide by the procedures set forth in this SSHP for the Mine Casing and Debris Removal Sites 2 and 9 and Site Screening Area 4 taking place at the Naval Weapons Station Yorktown.

Printed Name

Signature

Representing

Date[illegible]

1.0 Introduction

1.1 Objective

This Site Safety and Health Plan (SSHP) describes the safety and health guidelines developed to protect on-site personnel, visitors, and the public from physical harm and exposure to hazardous materials and incidents at Sites 2 and 9 and Site Screening Area 4 (SSA4) of the Naval Weapons Station (NWS) Yorktown. The procedures and guidelines contained herein were based upon the best available information at the time of the plan's preparation. Specific requirements may be revised if new information is received or site conditions change. A written amendment will document all changes made to the plan. Any amendments to this plan will be made with the knowledge and concurrence of both IT Corporation (IT) and the U.S. Navy (USN). All SSHP amendments will be included in Attachment A and submitted to the Contracting Officer Technical Representative (COTR) and Remedial Project Manager (RPM).

1.2 Site/Facility Description

NWS Yorktown is a 10,500-acre facility located between the York and James Rivers in York County, Virginia. It is bordered to the north by Cheatham Annex Naval Supply Center, by the York River on the east, and by Interstate Highway 64 on the west (Attachment B).

Some of NWS Yorktown's past missions included the development and testing of high explosives and advanced weapon systems. Currently, it provides advanced weapons maintenance, production, and storage in support of U.S. Navy activities.

A portion of the waste materials generated from these past missions were apparently randomly disposed of at NWS Yorktown creating numerous waste sites across the facility. Delivery Order No. 0016 deals with the removal of wastes from Sites 2 and 9 and SSA4.

Site 2: Turkey Road Landfill. The Turkey Road Landfill, also known as Site 2, is a 5-acre landfill located east of Turkey Road in a marsh adjacent to the south branch of Felgates Creek. Operations at the landfill began in the 1940s and stopped during 1981. The landfill is encompassed by a wooded area ranging from approximately 50 to 300 feet in width, which is in turn bounded on three sides by streams (including Felgates Creek). It is within this wooded perimeter surrounding the landfill that IT concentrated the Site 2 investigation (March 1994), as this area contains numerous unexploded explosive ordnance (UXO) along with other wastes deposited on the surface. Surface debris identified around the perimeter of the landfill included

various mine casings, depth charges, missile components, torpedoes, drums, and construction/demolition debris. At the present time, a beaver dam has been constructed east of the landfill along the south branch of Felgates Creek causing much of the surface debris to be submerged in this area. Figure 1 of the Removal Action Work Plan (RAWP) presents a plan view of Site 2, along with surface waste locations and boundaries.

Site 9: Explosives Contaminated Wastewater Area. The explosives-contaminated wastewater area, commonly called Site 9, was used from the late 1930s to 1975 as a drainageway for Plant 1 explosives-contaminated washwaters and possibly substantial quantities of organic solvents. During site walks conducted on October 19, 1993 and December 20, 1993, and during the March 1994 investigation, IT personnel observed surface debris consisting of numerous railroad ties and depth charge bodies which had been apparently dumped over the embankment just east of Collman Road. In addition, several depth charge bodies were also identified along the tributary to Lee Pond, west of Collman Road. The areas' vegetation consists of woods with small to medium size trees. Figure 2 of the RAWP presents a plan view of Site 9, along with surface waste locations and boundaries.

Site Screening Area 4: Weapons Casing Disposal Area. SSA4 is located near the intersection of Bypass Road and Main Road. During the October and December site walks, and during the March 1994 investigation, various UXO and surface debris were found to be present. All materials appear to have been dumped from the top of the embankment down into a drainage area on site. IT EOD personnel have surveyed all visible ordnance and determined that it is all inert. In addition, IT completed a magnetometer survey and test pit operation of the field adjacent to Bypass Road since an apparent ravine fill had taken place within the area. During the test pitting, IT determined that a portion of the field did contain buried objects (railroad ties, etc.) beneath the surface. Figure 3 of the RAWP presents a plan view of SSA4 along with surface waste locations and boundaries.

The RAWP developed for Delivery Order 0008 contains a more in-depth description of these three areas.

1.3 Policy Statement

It is the policy of IT to provide a safe and healthful work place for all employees, subcontractors, and consultants in compliance with governmental requirements. Additionally, the requirements of our clients shall take precedence provided that their requirements exceed those of IT and governmental regulations.

We believe in two fundamental principles of safety: all accidents, injuries and occupational illnesses are preventable; and if an operation cannot be done safely, we will not do it. To put these principles into practice, every associate will receive the appropriate training, equipment, and other resources necessary to complete assigned tasks in a safe and efficient manner.

Safety, industrial hygiene, and loss prevention are the direct responsibility of all members of management, who must create an environment in which everyone shares a concern for their own safety and the safety of their associates. Safety shall take precedence over expediency or shortcuts. It is a condition of employment that all employees work safely and follow established safety rules and procedures.

Managers must conduct their businesses in compliance with governmental safety regulations and company procedures. All IT health and safety procedures must be implemented for all IT employees on all projects where IT is the subcontractor, or a joint venture partner. If IT is the prime contractor, IT procedures shall be applied to all IT and subcontractor personnel.

The implementation of effective safety and health practices is a key measure of managerial performance. Management, with the assistance of the internal health and safety professional staff, will conduct audits to assess the effectiveness of the safety program(s) in place, and to identify areas for improvement. All deficiencies shall be corrected promptly.

All injuries, occupational illnesses, vehicle accidents, and incidents with potential for injury or loss will be investigated. Appropriate corrective measures will be taken to prevent recurrence, and to continually improve the safety of our workplace.

1.4 References

Title 29, Code of Federal Regulations (CFR), Part 1910 - Occupational Safety and Health Standards.

Title 29, CFR, Part 1904 - Recording and Reporting Occupational Injuries and Illnesses.

Title 49, CFR, Part 171 - General Information, Regulations, and Definitions.

Title 49, CFR, Part 172 - Hazardous Materials Table, Special Provisions, Hazardous Materials, Communications, Emergency Response Information, and Training Requirements.

Title 29, CFR, Part 1926 - Safety and Health Regulations for Construction.

U.S. Army Corp of Engineers, Safety and Health Requirements Manual, EM 385-1-1, October 1992.

National Institute for Occupational Safety and Health (NIOSH)/Occupational Safety and Health Administration (OSHA)/USCG/U.S. Environmental Protection Agency (EPA), Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, Publication No. 85-115, October 1985.

NIOSH, Pocket Guide to Chemical Hazards, Publication No. 90-117, Revised 1990.

American Conference of Governmental Industrial Hygienists (ACGIH), Threshold Limit Values and Biological Exposure Indices for 1993-1994.

Navy/Marine Corps Installation Restoration Manual, February 1992.

Round One Remedial Investigation Report Sites 1-9, 11, 12, 16-19, and 21, NWS Yorktown, Roy F. Weston, Inc., July 1993.

Contents of this plan are consistent with the following IT H&S Policies and Procedures:

IT Health and Safety Policies and Procedures

Procedure Number	Procedure Name
HS001	Safety Policy
HS002	Safety Policy: International Operations
HS010	Employee Safety and Health Work Rules
HS011	Contractor Safety and Health Rules
HS013	Health and Safety Procedure Variances
HS018	Safety Councils (Revision 1)
HS019	Injury and Illness Prevention Program (Revision 2)
HS020	Accident Prevention Program: Reporting, Investigation, and Review (Revision 3)
HS021	Accident Prevention Program: Management Safety Audits and Inspections (Revision 3)

**Procedure
Number****Procedure Name**

HS022	Accident Prevention Program: Review of New Proposals, Projects, Operation, and Construction
HS040	Stop Work Authority
HS041	Embryo-Fetus Protection Program
HS050	Training Requirements
HS051	Tailgate Safety Meetings
HS052	Health and Safety Plans
HS060	Hazard Communication Program
HS080	Insurance Claims
HS090	OSHA Regulatory Inspections
HS091	Serious Injury and Fatality Reporting Requirements
HS092	Occupational Injury and Illness Reoccurred
HS100	Medical Policies and Procedures
HS101	Drug and Alcohol Testing (Revision 1)
HS102	Access to Employee Exposure and Medical Records
HS104	Employee Notification of Industrial Hygiene Monitoring Results
HS105	Occupational Injuries/Illnesses Procedures
HS106	First Aid Kits
HS300	Confined Spaces, Industrial
HS303	Hydroblasting
HS304	Compressed Gases
HS305	Pressurized Systems
HS306	Handling Known Compressed Gas Cylinders
HS307	Excavation and Trenching
HS308	Scaffolding
HS310	Hazardous Waste Operations at Uncontrolled Waste Sites
HS311	Emergency Response Operations
HS314	Hot Work in Hazardous Locations
HS400	Working in Hot Environments

**Procedure
Number****Procedure Name**

HS401	Cold Stress
HS402	Hearing Conservation Program
HS505	Handling of Inorganic Lead, Inorganic Lead Compounds, and Organic Lead Soaps
HS506	Handling of Inorganic Arsenic
HS507	Handling of Dibromochloropropane (DBCP)
HS508	Handling of Beryllium and Beryllium Contaminated Materials
HS509	Handling, Removal and Disposal of Asbestos and Asbestos Contaminated Materials
HS510	Asbestos Work in Schools
HS511	Handling of Benzene and Benzene Contaminated Materials
HS512	Handling of Blood or Other Potentially Infectious Materials
HS513	Handling Radioactive Materials
HS600	Personal Protective Equipment
HS601	Respiratory Protective Program
HS602	Eye Protection - Prescription Safety Glasses
HS603	Maintenance of Survey Equipment
HS604	Use and Maintenance of Portable Electrical Equipment
HS605	Electron Capture Detectors
HS606	Soil Density Gauges
HS800	Motor Vehicle Operation: General Requirements
HS810	Commercial Motor Vehicle Operation and Maintenance
HS820	Forklift Operation
HS821	Breathing Air Cylinder Trailer
HS822	Mobile Crane Inspection

These policies and their implementation are central to IT's accident prevention program. IT will make copies of its Health and Safety policies available to the Army Corps of Engineers upon request.

2.0 Organization, Qualifications, and Responsibilities

2.1 All Personnel

All site personnel will be responsible for continuous adherence to safety and health procedures during the performance of assigned work. In no case may work be performed in a manner that conflicts with the intent of this plan or the inherent safety and environmental cautions outlined in this plan. After due warnings, personnel violating safety procedures will be dismissed from the site and possibly terminated from further work.

Any person who observes unsafe acts or conditions or other safety problems should immediately report observations/concerns to the Site Safety and Health Coordinator (SSHC). If there is any dispute with regard to safety and health, on-site staff will attempt to resolve the issue on site and if the issue cannot be resolved, they will consult off-site technical staff and supervisors for assistance. The specific task or operation in question shall be discontinued until the issue is resolved.

2.2 Safety and Health Manager

The Safety and Health Manager (SHM) is responsible for the development, implementation, and oversight of the Safety and Health Program and the SSHP.

The SHM will have a minimum of 3 years of working experience in developing and implementing safety and health programs at hazardous waste sites. The SHM will have expertise in air monitoring techniques, development of personnel protective equipment (PPE) programs for working in potentially toxic atmospheres, and he/she must have working knowledge of applicable federal, state, and local occupational safety and health regulations. The SHM will oversee/review the site operations and review and approve this SSHP and any of its amendments. The SHM will also have a formal education and training in occupational safety and health or a related field and certification in Industrial Hygiene by the American Board of Industrial Hygiene (ABIH).

2.3 Site Safety and Health Coordinator

The SSHC will conduct daily inspections to determine if operations are being conducted in accordance with the SSHP, USN contract requirements, and OSHA regulations. The SSHC is assigned to the Project Manager (PM) for the duration of the project, but reports directly to the

SHM with operational issues. An open dialogue is kept between the SSHC and supervisory personnel of the project to ensure that safety issues are quickly addressed and corrective action taken. The SSHC's autonomy from project personnel maintains the checks and balances system between operations and safety and health. This prevents a conflict of interest and verifies that the safety and health of the project team is not compromised at any time. In the absence of a SSHC, the Unexploded Explosive Ordnance Supervisor will assume the responsibilities of the SSHC.

The SSHC will have a minimum of 1 year of working experience at hazardous waste sites where EPA Level B or C PPE was required. Specialized training in PPE and respiratory protective equipment, confined space program oversight, proper use of air monitoring instruments, air sampling methods, and interpretation of results is required. He/she must be certified as having completed first aid and cardiopulmonary resuscitation (CPR) by a recognized organization such as the American Red Cross and he/she must have working knowledge of applicable federal, state, and local occupational safety and health regulations.

The SSHC will discuss with all local emergency response facilities (i.e., fire department, police, and hospitals) all potential emergency response activities on site. He/she will meet with the local emergency response facilities and develop plans to respond to an emergency. The SSHC will develop maps, phone numbers and contact names based on the information provided in the meetings.

2.4 Project Manager

The PM is responsible for ensuring that the necessary personnel are available for this project and that the reporting, scheduling, and budgetary obligations for this project are met.

The PM will have a minimum of 3 years of experience in management of hazardous waste operations and/or emergency response, and an education in the environmental profession or a related field.

2.5 Site Superintendent

The Site Superintendent (SS), as the on-site representative of IT, is responsible for maintaining contact with the RPM, the SHM, and the PM. The SS is also responsible for implementation of this SSHP. The SS will report to the PM and work directly with the RPM.

The SS will have a minimum of 2 years of field and supervisory experience. The SS will be competent, experienced, and knowledgeable in the field of hazardous and toxic waste cleanup and specific activities anticipated during the project. The SS will act as the Competent Person and will inspect all excavation activities.

2.6 Unexploded Explosive Ordnance Supervisor

The UXO Supervisor assigned to the project will be responsible for determining the hazard presented by each UXO. Qualified UXO specialists may also be delegated the authority to identify UXO and determine the hazard presented by UXO during routine site operations. But, any UXO that is not easily and positively identifiable must be brought to the attention of the UXO Supervisor for a determination of the procedures to be used for handling that specific UXO, prior to any action being taken. The UXO supervisor will be a graduate of the USN School of EOD and also possess military EOD experience.

2.7 Subcontractors, Visitors and Other On-Site Personnel

Subcontractors are responsible for the safety and health of their employees and for complying with the standards established in this SSHP and the guidelines established in IT's Safety Rules for Contractors. Subcontractors will report directly to the SS. All subcontractors, visitors, and other on-site personnel must check in with the SS prior to gaining access to the site, in order to verify that appropriate entry requirements are met.

2.8 Naval Weapons Station Yorktown Entry Requirements

No IT employee or subcontractor will be admitted onto NWS Yorktown without first obtaining an identification badge through the Pass Office. The following employee information must be provided to the RPM 5 working days prior to start of work:

- Name of company
- Name of the employee
- Social security number
- Proof of U.S. citizenship
- A completed Contractor/Vendor Criminal History Record Request
- A completed application.

Personnel must also bring a valid picture identification and proof of citizenship to the Pass Office in order to be issued a pass.

Once the pass is issued, the PM or SS may grant authorization to enter the three sites. Access to contaminated work areas is regulated and limited to authorized personnel who meet the requirements of Section 6.5. Representatives from regulatory agencies will be permitted to enter the site at any time during business hours or at other reasonable times, by appointment, to conduct official business. Representatives of the news media must receive authorization from the NWS Yorktown Public Affairs Officer, RPM, and the PM before entry.

3.0 Job Hazard/Risk Analysis (Accident Prevention Plan)

3.1 Scope of Work

IT will conduct a removal action for Sites 2 and 9 and SSA4 located on NWS Yorktown. The following tasks are expected to be performed at these three sites:

- Site setup
 - Clearing and grubbing
 - Temporary site access road construction
 - Field office establishment
 - Work area identification
 - Perimeter security fence erection
 - Contamination control zone delineation
 - Personnel decontamination facility establishment
 - Equipment decontamination pad and drum handling area construction
 - Roll-off container storage area construction
- Site preparation
 - Field subsurface survey
 - Protection of site features
 - Erosion and sedimentation control installation
- Waste removal
 - Waste removal operations
 - UXO removal
 - Surface debris removal
 - Railroad ties
 - Drum removal
 - Battery removal
 - IT-generated waste removal
- Site restoration
 - Backfill material
 - Backfill material placement and compaction
 - Common fill placement
 - Topsoil placement and final grading
 - Revegetation
 - Protection of surfaces

- Transportation and disposal of waste
 - Temporary storage of contaminated materials
 - Transportation and disposal.

An Activity Hazard Analysis (AHA) for each of these major tasks can be found in Attachment C.

The AHA is an ongoing process from initiation of the SSHP to implementation and completion of field work. Unanticipated hazards not addressed in these AHAs will be added in the field by the SSHC. These modifications will be submitted to both the SHM and the RPM for approval. The AHAs provided in this SSHP are consistent with the requirements set forth in EM 385-1-1, Section 01.A.09. This SSHP also serves as the project's Accident Prevention Plan.

3.2 Chemical Hazards

This section discusses the chemical hazards associated with materials that are used on the site or are likely to be found on the site. The SHM will update this section as information developed during this project warrants. Previous field investigations performed at Sites 2 and 9 and SSA4 indicate the presence of batteries, UXO, fire extinguishers, construction/demolition debris, railroad ties, and drums in various locations of the sites. The different waste materials found at each site are as follows:

Waste Material	Site 2	Site 9	SSA4
• UXO	✓	✓	✓
• Surface Debris	✓	✓	✓
- Construction/Demolition Debris	✓		✓
- Railroad Ties	✓	✓	
- Fire Extinguishers			✓
• Drums	✓		✓
- Hazardous Solid Waste			✓
- Nonhazardous Solid Waste	✓		✓
- Empty	✓		✓
- HEPA Filters	✓		
• Carbon Zinc Batteries	✓		

The significant chemical hazards that have been identified in the groundwater, surface water, sediment, and soil samples at the three sites include: polynuclear aromatic hydrocarbons (PAH), lead, chromium, trichloroethene (TCE), polychlorinated biphenyls (PCB), 1,2-Dichloroethene (DCE), methyl ethyl ketone (MEK), acetone, cyclonite (RDX), 2,4,6-Trinitrotoluene (TNT), and 2,4- and 2,6-Dinitrotoluene (DNT). Other contaminants were also detected but at insignificant levels that do not impact workers health. Although all routes of exposure may present potential risk to field personnel, it is anticipated that dermal contact with contaminated particulates and liquids and inhalation of contaminated particulates and vapors pose the greatest hazard. Every effort should be made by field personnel to avoid skin contact with contaminated water and soil, and breathing vapors. Ingestion of contaminated particulates is a secondary route of exposure.

Trichloroethene is a colorless liquid, unless dyed, with a sweet odor like chloroform. Target organs include the respiratory system, heart, central nervous system, liver, kidneys, and skin. Symptoms of acute exposure include headache, visual disturbance, tremors, nausea, vomiting, eye irritation, dermatitis, and tingling in the extremities. Trichloroethylene is considered an occupational carcinogen.

1,2-Dichloroethene is a colorless liquid with an ether-like slightly acrid odor like chloroform. Routes of entry into body include inhalation, ingestion, and skin or eye contact. Symptoms of acute exposure include eye irritation, dizziness, nausea, skin irritation, and mucous membrane irritation.

Polynuclear Aromatic Hydrocarbons are a group of semivolatile organics that are rather persistent in the environment. Some PAHs are carcinogenic with inhalation as the primary exposure route. The greatest carcinogenic effect is at the point of contact (i.e., lungs, skin, stomach). Skin disorders may also result due to high concentration exposures. Exposure limits have not been established for many specific PAHs in this large group of compounds.

2,4,6-Trinitrotoluene is a colorless to pale yellow solid that is odorless. Exposure to TNT targets the blood, liver, kidneys, eyes, skin, cardiovascular system, and central nervous system. Exposure is predominantly through dermal contact. Symptoms of exposure include sneezing, cough and sore throat, jaundice, muscular pain, dermatitis, and kidney and liver damage. Acute and chronic exposure to TNT causes a reduction of red blood cell count and hemoglobin content; leukocytosis (change in white blood cell count) may occur. Cataracts may be associated with

chronic exposure to TNT. Nose bleeds and hemorrhages caused by capillary fragility can be attributed to TNT exposure. Systematic effects of TNT exposure take the form of toxic hepatitis leading to yellow atrophy of the liver or hypoplasia of the bone marrow resulting in aplastic anemia.

Cyclonite is a white crystalline compound with primary exposure via inhalation of dust. Ingestion of RDX can also occur. RDX targets the central nervous system. Acute symptoms are present within a few hours after exposure and follow a general sequence of: restlessness and hyperirritability; weakness; headache; dizziness; severe nausea and vomiting; epileptic-like seizures which often are repeated; unconsciousness between or after convulsions; muscle twitching and soreness; stupor, delirium, confusion; gradual recovery accompanied by amnesia in the beginning. Irritation to skin and mucous membranes can also occur as symptoms of RDX exposure.

Chromium is a metal which occurs in trivalent and hexavalent forms, and is used for alloys, stainless-steel, and protective coatings. Different chromium compounds have strong and varied colors. Exposure to chromium compounds targets the respiratory system and symptoms include fibrosis of the lungs. Hexavalent chromium (CrVI) compounds, including chromic acid, are carcinogenic and corrosive to body tissues.

Lead is a fairly common metal with a variety of industrial applications. The gastrointestinal tract, central nervous system, kidneys, blood, and gums are targets of lead exposure. Symptoms of exposure include lassitude, insomnia, constipation, abdominal pain, colic, anemia, hypertension, anorexia, low body weight, malnutrition, pallor, tremors, and paralysis of the wrist.

2,4- and 2,6-Dinitrotoluene is an orange-yellow solid with a characteristic odor. DNT targets the blood, liver, and cardiovascular system. Exposure routes are primarily inhalation and dermal contact. Chief symptoms of DNT exposure may include unpleasant metallic taste, weakness, dizziness, headache, loss of appetite, nausea, vomiting, difficulty in sleeping, and pain, numbness, and tingling in the extremities. Other symptoms are jaundice, anemia, anoxia, and cyanosis (a bluish discoloration of the skin). Dinitrotoluene is mutagenic in some testing animals, and NIOSH considers it a potential human carcinogen.

Acetone is a colorless liquid with a fragrant, mint-like odor. Acetone targets the respiratory system and skin. Symptoms of exposure include irritation to the eyes, nose, and throat, headache, dizziness, and dermatitis.

Methyl Ethyl Ketone is a clear, colorless liquid with a fragrant, mint-like, moderately sharp odor. Exposure targets the lungs and central nervous system. Symptoms of exposure include irritation of the eyes and nose, headache, vomiting, and dizziness.

Polychlorinated biphenyls. The potential chemical hazards involved at the site are related to PCB contamination. The most common routes of entry are from skin contact or ingestion. Toxic effects in humans include chloracne, pigmentation of the skin and nails, excessive eye discharge and swelling of the eyelids. Systemic effects include nausea, vomiting, loss of weight, jaundice, edema, and abdominal pain. PCBs are a hepatotoxin.

Established exposure guidelines for the various contaminants likely to be encountered during IT's activities at Sites 2 and 9 and SSA4 can be found in Table 3-1.

Table 3-1
Exposure Guidelines

Contaminants	OSHA PEL	ACGIH TWA
Chromium (VI)	0.05 mg/m ³	0.05 mg/m ³
Lead	0.05 mg/m ³	0.15 mg/m ³
RDX	1.5 mg/m ³	1.5 mg/m ³
2,4,6-Trinitrotoluene	0.5 mg/m ³	0.5 mg/m ³
Trichloroethene	50 ppm	50 ppm
Acetone	750 ppm	750 ppm
Chlorodiphenyl (42% chlorine)	1 mg/m ³	1 mg/m ³
Chlorodiphenyl (54% chlorine)	0.5 mg/m ³	0.5 mg/m ³
1,2-Dichloroethylene	200 ppm	200 ppm
Methyl ethyl ketone	200 ppm	200 ppm
Dinitrotoluene	1.5 mg/m ³	0.15 mg/m ³

4.0 Standard Operating Safety Procedures, Engineering Controls, and Work Practices

4.1 General Practices

- Whenever possible, avoid contact with contaminated (or potentially contaminated) surfaces. Walk around (not through) puddles and discolored surfaces. Do not kneel on the ground or set equipment on the ground. Stay away from any waste containers if possible. Protect equipment from contamination by bagging it.
- All contamination reduction zones (CRZ) and exclusion zones (EZ), as established on the site, shall be observed. Entry into a CRZ and EZ shall be by prior notification and authorization of the Site Superintendent. All required PPE shall be worn prior to entering these zones.
- Contaminated equipment and PPE, such as respirators, gloves, boots, etc. (if not discarded) shall not be removed from the CRZ until they have been properly cleaned.
- Legible and understandable precautionary labels shall be affixed prominently to containers of contaminated scrap, waste, debris, and clothing.
- Contaminated materials shall be stored in tightly-closed containers in well-ventilated areas.
- No food or beverages shall be present or consumed in a CRZ or EZ. These are only allowed in designated areas of the support zone (SZ).
- No tobacco products shall be present or used, and cosmetics shall not be applied in a CRZ or EZ. These are only allowed in designated areas of the SZ, if areas have been designated.
- Beards, facial hair, or other facial obstructions that interfere with respirator fit will preclude admission to the EZ when respirators are required.
- Emergency equipment shall be located outside storage areas, in readily accessible locations, which will remain minimally contaminated.
- Field personnel must observe each other for signs of toxic exposure. Indications of adverse effects include, but are not limited to:

- Changes in complexion and skin discoloration
 - Changes in coordination
 - Changes in demeanor
 - Excessive salivation and pupillary response
 - Changes in speech pattern.
- Field personnel shall be cautioned to inform each other of nonvisual effects of toxic exposure such as:
 - Headaches
 - Dizziness
 - Nausea
 - Blurred vision
 - Cramps
 - Irritation of eyes, skin, or respiratory tract.
 - Any detected effects of toxic exposure shall be reported to the SSHC immediately.
 - The wearing of contact lenses is not allowed in a CRZ or EZ.
 - An emergency eyewash unit shall be located immediately adjacent to employees who handle hazardous or corrosive materials, including decontamination fluids. All operations involving the potential for eye injury, splash, etc., must have approved eye wash units locally available capable of delivering at least 0.4 gallons per minute for at least 15 minutes.
 - If any on-site activities, including decontamination, continue later than dusk, adequate lighting must be provided. Work areas must have adequate lighting for employees to see to work and identify hazards (5-foot candle minimum). Personnel should carry flashlights in all normally dark areas for use in the event of a power failure.
 - All electrical power must have a Ground Fault Circuit Interrupter (GFCI) as part of its circuit if the circuit is not part of permanent wiring. All equipment must be suitable and approved for the class of hazard present.
 - Operations involving the potential for fire hazards shall be conducted in a manner as to minimize the risk of fire. Nonsparking tools and fire extinguishers shall be used or available as appropriate. Sources of ignition shall be removed. When necessary, explosion-proof instruments and/or bonding and grounding techniques will be used to prevent fire or explosion.
 - Overhead and underground utility hazards shall be identified and or inspected prior to conducting operations involving potential contact with utility lines.

- If equipment is located in the vicinity of overhead power lines, Table 4-1 will be used to determine safe working conditions.

4.2 Buddy System

The "buddy system" will be used at all times by all field personnel in the EZ. No one is to perform field work alone. Maintain visual, voice, or radio communication at all times.

4.3 Excavation Procedures

IT Procedure HS307 for excavation and trenching must be followed if excavation activities occur on site. At this time, there are no anticipated excavation activities associated with this delivery order. If such an activity does occur, an addendum to this plan will be developed and included in Attachment A.

4.4 Hot Work

SSHC Responsibilities

- Based on fire potentials, the SSHC will establish approved areas for welding, cutting, and other hot work.
- The SSHC will be responsible for obtaining preapproval for hot work by the NWS Yorktown Fire and Safety Department.
- The SSHC will be responsible for authorizing welding, cutting, and other hot work in areas not specifically designed or approved for such operations.
- The SSHC will ensure that only approved apparatus, such as torches, manifolds, regulators, or pressure reducing valves, and acetylene generators, be used on site.
- The SSHC will ensure that cutters or welders and their supervisors are properly trained in the safe operation of their equipment, the safe use of the process, and emergency procedures in the event of a fire.

Fire Prevention Precautions

- Cutting, welding, or other hot work shall be permitted only in areas that are or have been made firesafe.

- Cutting or welding shall NOT be permitted in the following situations:
 - In areas not authorized by the SSHC and preapproved by the NWS Yorktown Fire and Safety Department.
 - In the presence of explosive atmospheres (mixtures of flammable gases, vapors, liquids, or dusts with air), or explosive atmospheres that may develop inside uncleaned or improperly prepared drums, tanks, or other containers, and equipment which has previously contained such materials.
 - In any area where CGI readings are in excess of 10 percent of the LEL.
 - On storage or process vessels or lines in service which contain flammable or combustible liquids, gases, vapors, or solids.

Preparation and Permits for Hot Work

- Before any welding, cutting, or other hot work is permitted, the area shall be inspected by the SSHC to ensure that the following requirements have been met:
 - Cutting and welding equipment to be used shall be in safe operating condition and in good repair.
 - Where practical, all combustible material shall be relocated at least 50 feet horizontally from the work site. Where relocation is impractical, combustibles shall be protected with flame-proofed covers or otherwise shielded.
 - At a minimum, two fully charged and operable fire extinguishers, appropriate for the type of possible fire, shall be available at the work area.
 - Fire watchers shall be required whenever hot work is performed in hazardous locations.
 - CGI readings are taken and the work area is free of combustible gases and vapors.
 - The work area is free of toxic contaminants at concentrations in excess of established threshold limit values, or, all personnel who will work in the area have been provided respiratory protective devices and protective apparel appropriate for the degree of exposure.
 - When hot work is to be performed on tanks or other vessels that contain or have contained flammable or combustible liquids, the vessel shall be properly isolated,

purged, and cleaned, as appropriate, to reduce the concentrations of flammable and toxic air contaminants to safe levels.

- All hot work permits will be completed by the SSHC, preapproved by the NWS Yorktown Fire and Safety Department, reviewed with personnel who will perform the hot work, and posted near the job site.
 - The hot work permit is good only for the date issued and is valid only for the 8-hour shift for which it is issued.
 - If at any time during the hot work operation a change in conditions at the work site is suspected, such a release of flammable gases or vapors in the work area, work shall be stopped immediately and the SSHC shall be notified. Such work stoppage invalidates the hot work permit, and a new permit shall be completed after inspections and tests have been performed by the SSHC.
 - No erasures or changes of dates on hot work permits shall be permitted.

4.5 Cold Stress

Some activities during the execution of this project may occur during the winter, likely exposing personnel to cold stress hazards.

Most cold-related worker fatalities have resulted from failure to escape low environmental air temperatures, or from immersion in low temperature water. The single most important aspect of life-threatening hypothermia is a drop in the deep-core body temperature.

4.5.1 Signs and Symptoms of Cold Stress

Employees should be protected from exposure to cold so that their deep-core body temperature does not fall below 98.6 degrees Fahrenheit (°F). A lower body temperature will very likely result in reduced mental alertness, reduction in rational decision making, or loss of consciousness with the threat of fatal consequences.

Frostbite. Frostbite occurs when the extremities do not get sufficient heat from the central body stores. The fluids around the cells of the body tissues freeze from exposure to low temperatures. This condition can result in damage to, and loss of, tissue. The most vulnerable areas are the nose, cheeks, ears, fingers, and toes.

Damage from frostbite can occur in either the outer layers of skin or in the tissue beneath these layers, and can be serious, resulting in scarring, tissue death, permanent loss of movement, or amputation.

There are three degrees of frostbite:

- First degree: freezing without blistering or peeling
- Second degree: freezing with blistering or peeling
- Third degree: freezing with skin tissue death and possible deeper tissue damage.

Symptoms of frostbite include:

- Skin color changes to white or grayish-yellow, to reddish-violet, and finally black as the tissue dies
- Pain may be felt at first, but subsides
- Coldness or numbness of the affected part.

Hypothermia. This is the most severe form of cold stress and results from a drop in the body's core temperature. The symptoms of hypothermia are:

- First, uncontrollable shivering and the sensation of cold
- Heartbeat slows and may become irregular
- Pulse weakens and the blood pressure changes
- As the body's core temperature drops, other signs may include cool skin, slow irregular breathing and apparent exhaustion
- When core temperatures are in the mid-range, the victim may become listless and confused, exhibit severe shivering, or develop severe pain in the extremities
- Final signs are a significant drop in blood pressure, fatigue, and shallow respiration.

4.5.2 Control Measures

When the ambient air temperature falls below 36°F, the following cold weather clothing requirements will be adhered to:

- If wind chill is a factor, the cooling effect of the wind shall be reduced by shielding the work area or providing employees an outer windbreak layer garment.
- Extremities, ears, toes, and nose shall be protected from extreme cold by protective clothing.
- Employees performing light work and whose clothing may become wet shall wear an outer layer of clothing which is impermeable to water.
- Employees performing moderate to heavy work and whose clothing may become wet shall wear an outer layer of clothing which is water repellent.
- Outer garments must provide for ventilation to prevent wetting of inner clothing by sweat.
- If clothing is wet, the employee shall change into dry clothes before entering a cold environment.
- Workers shall change socks and removable felt insoles at regular daily intervals or use vapor barrier boots.
- Workers who become immersed in water or whose clothing becomes wet shall immediately be provided a change of clothing and be treated for hypothermia if necessary. If the clothing becomes wet from sweating, the employee may finish the task which caused the sweating before changing into dry clothes.
- Employees will be provided with thermal underwear, insulated coveralls, gloves, socks, and boots.

When employees are working in air temperatures of -15°F or less, the guidance given in Table 4-2, Cold Weather Work/Warmup Regimen, will be followed.

Metal handles of tools and control bars will be covered by thermal insulating materials when temperatures fall below 30°F.

Whenever the site becomes covered with snow or ice, eyewear providing protection against ultraviolet light, glare, and blowing ice crystals will be worn by employees.

4.6 Heat Stress

Due to the hot and humid climate often encountered in the Tidewater area of Virginia, the prevention of heat stress is of paramount importance during the completion of this project.

Heat stress is caused by a number of interacting factors, including environmental conditions, clothing, workload, and individual characteristics. Extreme hot weather can cause physical discomfort, loss of efficiency, or personal injury.

Individuals vary in their susceptibility to heat stress. Factors that may predispose individuals to heat stress include:

- Lack of physical fitness
- Insufficient acclimation
- Age
- Dehydration
- Obesity
- Alcohol and/or drug use
- Medical conditions
- Infection
- Sunburn
- Diarrhea
- Chronic disease.

Reduced work tolerance and the increased risk of heat stress are directly influenced by the amount and type of PPE worn. PPE adds weight and bulk and severely reduces the body's access to normal heat exchange mechanisms (evaporation, convection, and radiation), and increases energy expenditure.

4.6.1 Signs and Symptoms of Heat Stress

If the body's physiological processes fail to maintain a normal body temperature because of excessive heat, a number of physical reactions can occur ranging from mild to fatal.

Heat related problems include:

- Heat rash - caused by continuous exposure to heat and humidity and aggravated by chafing clothes. Heat rash decreases the body's ability to tolerate heat as well as being a nuisance.

- Heat cramps - caused by profuse perspiration with inadequate electrolytic fluid replacement. Heat cramps cause painful muscle spasms and pain in the extremities and abdomen.
- Heat exhaustion - caused by increased stress on various organs to meet increased demand to cool the body. Heat exhaustion causes shallow breathing; pale, cool, moist skin; profuse sweating; and dizziness. Heat exhaustion can be alleviated by promptly moving the affected individual to a cool place to lie down and providing cool fluids to drink.
- Heat stroke - the most severe form of heat stress. Heat stroke symptoms include hot, dry skin; no perspiration; nausea; dizziness; confusion; strong, rapid pulse; and coma. The body must be cooled immediately to prevent severe injury or death.

4.6.2 Heat Stress Prevention

One or more of the following practices will help reduce the probability of succumbing to heat stress:

- Acclimate workers to heat conditions when field operations are conducted during hot weather.
- Provide plenty of liquids to replace the body fluids lost by perspiration. Fluid intake must be forced because, under conditions of heat stress, the normal thirst mechanism is not adequate to bring about a voluntary replacement of lost fluids.
- Provide cooling devices to aid natural body ventilation. However, these devices add weight and should be balanced against worker comfort.
- If possible, install mobile showers or hose-down facilities to reduce body temperature and cool protective clothing.
- If possible, conduct field operations in the early morning.
- Train personnel to recognize the signs and symptoms of heat stress and its treatment.
- Rotate personnel to various job duties, if possible.
- Provide shade or shelter to relieve personnel of exposure to the sun during rest periods.

Individuals succumbing to the symptoms of heat stress will notify the SSHC coordinator or SS immediately. The onset of heat stress will preempt any of the aforementioned, halt activities and initiate treatment. Early detection and treatment of heat stress will prevent further serious illness or injury and lost work time. Proper and effective heat stress treatment can prevent the onset of more serious heat stroke or exhaustion conditions. Individuals that have succumbed to any heat related illness become more sensitive and predisposed to additional heat stress situations.

4.6.3 Acclimatization

The degree to which an employee's body has physiologically adjusted or acclimatized to working under hot conditions is extremely important in the hot and humid conditions likely to be encountered in Virginia. NIOSH recommends a progressive 6-day acclimatization period for unacclimatized workers before allowing them to work at their full capacity. Under this regimen, the first day of work on site is begun using only 50 percent of the anticipated workload and exposure time, and 10 percent is added each day through day six. Six days should be considered the average time needed for worker acclimatization due to each individual's physical condition and their ability to adjust to hot and humid environments. It is important to note that employees can lose acclimatization in a matter of days and should be subjected to a short reacclimatization period when returning to Virginia from trips home to cooler environments.

4.6.4 Wet Bulb-Globe Temperature Monitoring

The Wet-Bulb Globe Temperature (WBGT) Index technique will be used to measure heat stress potential for site employees. This method will require the use of a heat stress monitoring device such as the Wibget Heat Stress Monitor (Reuter-Stokes). WBGT measurements will be taken a minimum of four times per day when ambient air temperatures exceed 78°F and personnel are wearing PPE, including Tyvek coveralls. If impermeable garments are not worn, this monitoring will begin at 85°F. WBGT readings will be compared to the Threshold Limit Values (TLV) outlined in the ACGIH TLVs manual and a work/rest regimen established, as necessary, according to the WBGT obtained. Once the initial work/rest regimen has been established, and ambient air temperatures exceed 90°F, physiological monitoring will be conducted by the SSHC in order to make any necessary adjustments to the regimen. WBGT measurement methods and the establishment of work/rest regimens will be based on the information supplied in Attachment E. Recommended Heat Stress Guidelines for Unacclimated/Acclimated Workers in Hot Environments.

4.6.5 Physiological Monitoring

Ambient temperature and other environmental factors provide basic guidelines to implement work/rest periods. However, since individuals vary in their susceptibility to heat stress, IT will also utilize physiological monitoring to regulate each individual's response to heat stress when ambient temperatures exceed 90°F and impermeable garments are worn. The two physiological parameters that each individual will monitor are:

- Heart rate - Each individual will count his/her radial (wrist) pulse for 30 seconds as early as possible in the first rest period. If the heart rate of any individual exceeds 100 beats per minute at the beginning of the rest period, then the work cycle will be decreased by one-third. The rest period will remain the same.
- Oral temperature - Each individual will measure his/her oral temperature with a single-use clinical thermometer for 1 minute as early as possible in the first rest period. If the oral temperature exceeds 99.6°F at the beginning of the rest period, then the work cycle will be decreased by one-third. The rest period will remain the same.

An individual is not permitted to return to work if his/her oral temperature exceeds 100.6°F.

Physiological monitoring information will be recorded on the Employee Record for Heat Stress. All monitoring will be performed by persons with a minimum of current Red Cross first-aid certification and individualized training to recognize the symptoms of heat stress.

4.6.6 Training

Personnel (including subcontractor employees) potentially exposed to heat stress conditions will have the following training during the site-specific training session.

- Employees
 - Sources of heat stress, influence of protective clothing, and importance of acclimation.
 - How the body handles heat.
 - Heat-related illnesses.
 - Preventive/corrective measures.

- First-aid procedures.
- IT Supervisors
 - Physiological monitoring, WBGT measurement methods and establishment of work-rest regimes based upon information supplied in Attachment E. Recommended Heat Stress Guidelines for Unacclimated/Acclimated Workers in Hot Environments.

4.7 Hearing Conservation

A hearing conservation program will be implemented at the site when exposures equal or exceed an 8 hour time-weighted average (TWA) of 85 decibel A-Scale (dBA). Hearing loss caused by high sound levels is a problem that can be prevented. As part of the criteria for the medical surveillance program established for this site, audiometric testing is conducted to monitor each worker's ability to hear. Sound level measuring will be conducted initially on site and whenever new tasks are started or additional equipment is brought onto the site that has not previously had its sound level quantified.

Caution should be taken at or around loud locations. Engineering controls such as mufflers and baffles should be utilized when feasible to reduce noise. Hearing protection, such as E-A-R™ plugs (Noise Reduction Rating [NRR] of 29), is required to be worn by personnel working with or around heavy equipment and as sound level monitoring dictates.

4.8 Confined Space Entry

IT's procedure for confined space entry will be followed if such an activity is needed during the completion of this project. A confined space is defined as a space large enough and so configured that an employee can bodily enter and perform assigned work, has limited means for entry or exit, and is not designed for continuous employee occupancy. Contaminated soil excavations, storage vessel entries, and other confined space work may pose additional hazards such as air contamination, flammable or explosive atmosphere, and oxygen deficiency. Excavation entry may pose the possibility of engulfment. IT has detailed training for confined space entry, and only personnel properly trained shall supervise and participate in confined space entry procedures or serve as standby attendants.

All confined spaces are initially considered permit required. Under certain conditions, a space may be reclassified as a nonpermit confined space provided the SSHC approves the

reclassification and the space meets the criteria outlined in HS300 (Attachment D - Confined Space Entry Procedure).

4.9 Sanitation

A break area will be designated and provided in an area in the SZ (outside of contaminated zones). Outdoor and indoor areas may be designated. The designated areas will be clean and will facilitate the number of workers using it. Eating, drinking, and tobacco usage may be permitted in break areas. Smoking will only be permitted in an NWS Yorktown-approved area, and then only if it is done in an area that is approved by the SSHC.

4.9.1 Water

IT will provide an adequate supply of drinking water. The water will be dispensed in an approved potable water system and in a manner which prevents contamination between the consumer and dispenser. All outlets dispensing nonpotable water will be posted "Caution - Water Unfit for Drinking, Washing, or Cooking". Systems furnishing nonpotable water and systems furnishing potable water will be constructed and remain completely independent of each other.

4.9.2 Toilets

If permanent toilet facilities are not available (within 500 feet), IT will provide a chemical toilet for the personnel on site. Arrangements will be made for the routine servicing and cleaning of these units. Water and cleaning compounds will be made available for decontamination, washing face and hands, and sanitation purposes. The number of toilets provided will be as follows:

Number of Employees	Minimum Number of Facilities
20 or fewer	One
More than 20, fewer than 200	One toilet seat and one urinal per 40 workers
More than 200	One toilet seat and one urinal per 50 workers

It is anticipated that one chemical toilet will be made available at each site for use by project personnel.

4.9.3 Trash Collection

Adequate trash receptacles will be placed around the job site for trash collection. Contaminated trash must be segregated from sanitary trash. Sanitary trash receptacles should be labeled "Sanitary Trash" and hazardous waste should be labeled according to applicable regulations.

High housekeeping standards must be maintained. Trash receptacles shall be emptied on a weekly basis (or more frequently if required).

4.10 Clearing - General Practices

If personnel are clearing brush using machetes, the following rules apply:

- When employees are using a machete to clear the area, no one is permitted within 30 feet of the person swinging the machete.
- Personnel will be instructed to not stand with their backs toward the active work area.
- All personnel must wear the appropriate PPE outlined in Chapter 5.0 and be familiar with the use of a machete.

When trees are being felled, the following rules must be adhered to:

- Before beginning the operation, alert all personnel in the area that the operation is about to commence. Then check that the area around the landing point of the tree is clear.
- Use a spotter to make sure the area remains clear.
- Check that there are no overhead power lines or obstructions that may catch or deflect the tree as it falls.
- Never turn your back on the tree while it is being felled.
- Watch for kickback from the saw and do not force the saw if it becomes stuck in the tree.

Never refuel hot equipment without using a funnel or a pour spout attached to the refueling can. All refueling handling equipment must be Underwriters Laboratories (UL) listed and Factory Mutual (FM) approved. A fire extinguisher must be located within 20 feet. The refueling must

be done in a designated area to prevent contamination from minor spills and to reduce the risk of fires.

4.11 Drum Inspection

The 51 drums present at Site 2 and SSA 4 have already been fully characterized during past IT site investigations. If any additional drums are found at the three sites, a visual inspection will be performed to assess the degree of hazard associated with each drum and to determine the proper handling technique. Personnel performing the drum inspection should look for the following information:

- Markings or labels that could potentially indicate drum contents.
- Drum type, size, and drumhead configuration.
- Drum content (liquid or solid) and estimated quantity of material.
- Signs of deterioration such as rust, corrosion, and leaks.
- Signs that the drum is under pressure, such as swelling and bulging.

Personnel should assume that unlabeled drums contain hazardous materials until the contents are positively characterized. Drums are frequently reused, thus a drum's label will not always indicate its contents.

Any drums with markings indicating explosive or highly reactive compounds or with yellow, red, or orange crystals present will not be moved. NWS Yorktown EOD Detachment personnel will be notified when such a drum is discovered.

4.11.1 Drum Classification

Upon completion of the inspection, personnel shall classify each drum into one of the following categories:

- Bulging Intact - drum under pressure indicated by swelling and bulging.
- Intact - drums sealed with a lid or bung in fair to poor condition with light to moderate damage.
- Crushed - drums that were crushed prior to burial with no apparent contents.

4.11.1.1 Crushed Drums

Drums that are determined to be crushed with no contents will be removed from the site. Physical handling of drums will be kept to an absolute minimum. If heavy equipment is used for drum transfer, a clearly marked loading area should be delineated with barricades or caution tape. Polyethylene sheeting will be placed inside the equipment bucket to limit any potential contamination migration.

4.11.1.2 Intact/Intact Bulging Drums

Drums categorized as intact bulging or intact will be handled as outlined in this section.

- When an intact drum is discovered, the SSHC will monitor the atmosphere immediately surrounding the drum with a photoionization detector (PID) to assess the presence of volatile organic compounds (VOC), a CGI to determine if a potential explosive atmosphere is present and a radiation survey meter to detect ionizing radiation.
- If the CGI indicates a lower explosion limit in excess of 10 percent or VOC readings exceed the action level of 50 ppm, the SSHC will halt work activities and direct the equipment operator to recover the drum and contact the SHM. Additional real-time monitoring action levels for drum handling are outlined in Section 4.11.6 of this plan.
- If the radiation survey indicates greater than background levels of ionizing radiation all activity associated with that drum will cease until contact is made with the SHM. If radiation levels are greater than 1 millirad per hour, NWS Yorktown EOD Detachment will also be contacted prior to continuance of work.
- Suitable quantities of absorbent and overpack drums will be kept available and used for drum overpacking and containing leaks or any spills that may occur.
- Drum removal and handling will be performed using a drum grapppler or similar equipment connected to a trackhoe. Site operations will be organized to minimize the amount of intact drum handling.
- The trackhoe equipped with the drum grapppler or equivalent will place the drum into an overpack. The overpack will be placed in the front-end loader bucket for transfer to the drum handling area.
- Intact drums will be pierced with a nonsparking spike attached to the trackhoe bucket. Personnel not essential to the operation will not be in the immediate area during drum opening activities. The SSHC will monitor the LEL, VOC, and radiation levels prior to and after the drum has been pierced.

- A unique identification number will be designated for each drum to be sampled. The identification number, sample date, and sample matrix will be recorded on a sample log.
- Hazard characterization will be performed on the intact drum contents. After the characterization is complete, the drum will be handled as appropriate for the identified material. The drum will be clearly marked with its unique identification number and the identified characteristics of the drum contents so that compatibility with other drums can be assessed and the drums can be stored, handled, or disposed of properly. The same markings will also be placed on the drum overpack.

4.11.2 Safety Procedures

This section outlines general safety requirements to be implemented during drum removal, sampling, and handling operations. Physical hazards that could potentially be encountered include explosions, fires, spills, splashes, excavations, and heavy lifting. The following procedures will be followed to reduce the possibility of employee injury and to provide protection to the environment during this task.

4.11.2.1 Fire Protection

Two 20 ABC fire extinguishers will be available and ready for use to control small fires. One fire extinguisher will be located in the drum handling area with the other located at the drum staging area.

Electrical equipment will not be used to puncture or transfer drum contents. All equipment and tools used to open drums will be made of a nonsparking material to prevent sources of ignition. Continuous LEL monitoring will be performed in the excavation area during drum handling operations. Work activities will be halted if LEL concentrations exceed 10 percent and the SHM will be contacted immediately.

4.11.2.2 Drum Excavation/Handling

All drums encountered during removal will be considered hazardous and handled accordingly until their contents have been positively identified. Only those personnel essential to drum removal activities will be in the area.

Communication between the ground personnel spotting drums and the equipment operator is essential for safe execution of this activity. Empty drums will not be crushed on top of unexcavated areas.

All ancillary excavation activities will be performed in accordance with IT Policy and Procedure HS307 and all applicable OSHA regulations.

4.11.3 Drum Sampling

Drums will be sampled within the drum handling area. Only those personnel essential to drum opening and sampling operations will be allowed in the area. Ground personnel will use heavy equipment to shield themselves as the drums are being pierced. Extreme caution will be taken when opening drums. Drums will be opened with a trackhoe equipped with a nonsparking spike and the operator will be protected by a clear explosion proof shield mounted on the machine.

Prior to and immediately after drum opening activities, the SSHC or his designee will monitor the atmosphere surrounding the drum, and once opened, the drum contents with a PID, CGI, and radiation survey meter. Work activities will be halted and the SHM notified if action levels in Section 4.11.6 are exceeded.

A unique identification number must be marked on each drum to be sampled. Identical markings will be placed on the drum's overpack after sampling results are obtained.

Suitable quantities of absorbent and overpacked drums complying with appropriate Department of Transportation (DOT), OSHA, and EPA regulations will be kept available and used in areas where leaks, spills, or ruptures may occur.

4.11.4 Drum Storage

After Hazcat and compatibility testing, drums will be segregated in the storage area so that no chemically incompatible drums are stored next to each other. All intact drums will be stored in overpacks.

The drum storage area will be clearly marked with caution tape and barricades. Fire extinguishers will be available for employee use in this area.

4.11.5 General Safety Procedures

- Access and egress areas will be kept clear of debris and other obstructions.
- Slip, trip, and fall hazards will be identified and remedied prior to and during work activities.
- Personnel will not stand on or work from: drums, containers, or equipment buckets.
- Supplied air for Level B respiratory protection shall be certified to be Grade D breathing air or better.
- Workers will refrain from physically handling drums. Objects greater than 60 pounds require assistance or the use of a mechanical lifting device.
- The excavation area will be monitored with a PID, CGI, and radiation survey meter.
- Emergency signal devices shall be placed in all equipment and in the excavation area.
- Fire protection equipment will be inspected and in good working order prior to work activities.
- Slings or chains will not be used to handle intact drums.
- Under no circumstances will intact drums be opened with a bung wrench or other hand tools. Drums will only be opened remotely with a trackhoe equipped with a nonsparking spike.

4.11.6 Action Levels for Drum Handling

The following table outlines the actions to be taken based upon real-time air monitoring results obtained during drum removal and handling.

REAL-TIME MONITORING ACTION LEVELS

Monitoring Equipment	Monitoring Results	Action
PID	Less than 50 ppm Breathing Zone	Continue work activities
	Greater than 50 ppm Breathing Zone	Halt work activities, contact SHM
CGI	LEL less than 10 Percent	Continue work activities
	LEL greater than 10 Percent	Halt work activities, contact SHM
	Oxygen Level 20-23 percent	Continue work activities
	Oxygen Level less than 20 percent	Halt work activities, contact SHM

Monitoring Equipment	Monitoring Results	Action
	Oxygen Level greater than 23 percent	Halt work activities, contact SHM
Radiation Survey Meter	Greater than background	Halt work activities, contact SHM
	Greater than 1 millirad/hour	Halt work activities, contact NWS Yorktown EOD

Real-time air monitoring results measured in the breathing zone are based on concentrations above background recorded four times in a 15-minute period. If air monitoring results exceed action levels, work activities will be halted to evaluate if engineering controls and levels of personal protection are adequate.

4.12 Unexploded Explosive Ordnance

Most of the surface debris at Sites 2 and 9 and SSA4 is UXO. IT UXO specialists will be used to safely and efficiently remove and stockpile the UXO during the removal actions. Prior to any UXO removal actions, the SSHC will determine if the UXO specialists have met all required medical and training requirements. UXO removal operations will be facilitated by the fact that most of the UXO observed during the site surveys were determined to be inert and do not present an explosive hazard. However, in the interest of project safety, this cannot be considered to be an indication that all of the UXO present at the three sites is inert. Therefore, all UXO will be considered to be live and extremely hazardous until it can be proven otherwise. Nothing in this section will be allowed to contradict guidance contained in "Safety Concepts and Basic Considerations for Unexploded Ordnance" by the USACE, Huntsville Division (Attachment H).

The UXO Supervisor assigned to the project will be responsible for determining the hazard presented by each UXO. Qualified UXO specialists may also be delegated the authority to identify UXO and determine the hazard presented by UXO during routine site operations. But, any UXO that is not easily and positively identifiable must be brought to the attention of the UXO Supervisor for a determination of the procedures to be used for handling that specific UXO, prior to any action being taken.

If a piece of ordnance is discovered, the UXO specialist will visually inspect it to determine if it is inert or if it presents a hazard to project personnel. If a positive identification cannot be made, the immediate excavation area will be roped off and personnel access restricted. At this

point, the NWS Yorktown EOD Detachment will be called in to remediate the suspect piece of ordnance. The following are some basic safety precautions applicable to UXO operations:

- During UXO operations only the minimum number of personnel essential to the operation should be present in the vicinity.
- Do not allow unauthorized or unnecessary personnel to be present in the vicinity of possible hazardous explosive ordnance or when UXO operations are pending or in progress.
- Personnel working with suspect UXO will comply with the following:
 - Do not carry fire or spark-producing devices on site.
 - Do not smoke, except in authorized areas
 - Do not become careless by reason of familiarity with ammunition
 - Do not conduct explosive operations during electrical, sand, dust, or snow storms
 - Do not conduct explosive operations between sunset and dawn.
- If a suspect chemical UXO is encountered, personnel shall immediately establish and maintain security of the UXO and the immediate vicinity until the NWS Yorktown EOD Detachment arrives and assumes custody.
- In dealing with an unknown type of ordnance, past experience, conditions of delivery, and probable or obvious targets will usually provide a clue as to type. However, considerations should include:
 - The most hazardous type it could be
 - The most hazardous features it could contain
 - The most hazardous condition it could be in.
- Do not take magnetic tools or equipment near an unidentified object until it can be absolutely determined that the object is not magnetically functioned.
- Do not wear outer- or undergarments made of wool, silk, or synthetic textiles such as rayon and nylon while working on UXO. These materials can generate sufficient static charge to ignite fuels or initiate explosives. Any person coming in contact with UXO shall ground himself prior to touching electronic explosive devices (EED). This must be done to discharge any electrostatic charge accumulation from the body.
- Consider explosive ordnance which has been exposed to fire as extremely hazardous. Chemical and physical changes may have occurred making it more sensitive.

- Do not subject any explosive-loaded item of ordnance to shock or rough handling.
- Protect explosive-loaded ordnance and explosive-loaded components from extremes of heat including the direct rays of the sun.
- Do not carry explosives or explosive components in pockets or elsewhere on the body unless in special containers designed and approved for this purpose.
- Do not permit smoking, matches, or other sources of fire or flame within 100 feet of an area in which explosives or explosive-loaded ordnance is being handled.
- Exercise extreme caution in dealing with old, damaged, and possibly deteriorated explosive-loaded ordnance. Certain explosives, notably picric acid and ammonium picrate may react with metals, other explosives, air, or chemicals in the earth to produce extremely sensitive explosive compounds.
- Do not rely on the color coding of UXO for positive identification of contents. Munitions having none or incomplete/improper color coding have been encountered.
- Assume a practice UXO contains a live charge until it can be determined otherwise.
- Avoid the area forward of the nose of a munition until it can be determined that the item is not a shaped charge. The explosive jet can be fatal to great distance forward of the longitudinal axis of the item.
- Assume any shaped charge munition to contain a piezoelectric (PZ), graze-sensitive fusing system until the fusing is otherwise identified. A PZ graze-sensitive fuse is extremely sensitive. It can fire at the slightest physical change and may remain hazardous for an indefinite period of time.

A UXO removal flow diagram has been included in the RAWP as Figure 7 outlining the decision-making process when handling UXO.

4.13 Biological Hazards

Ticks. Various species of ticks are indigenous to the coastal plains area of Virginia. Ticks are vectors of many different diseases including; rocky mountain spotted fever, Q fever, tularemia, Colorado tick fever, and lyme disease. They attach to their host's skin and intravenously feed on its blood creating an opportunity for disease transmission. Covering exposed areas of the body and the use of tick repellent are two ways to prevent tick bites. Periodically during the

workday employees will inspect themselves for the presence of ticks. If a tick is discovered, the following procedure should be used to remove it:

- Do not try to detach a tick with your bare fingers; bacteria from a crushed tick may be able to penetrate even unbroken skin. Fine-tipped tweezers should be used.
- Grip the tick as close to your skin as possible and gently pull it straight away from you until it releases its hold.
- Do not twist the tick as you pull and do not squeeze its bloated body. That may actually inject bacteria into your skin.
- Thoroughly wash your hands and the bite area with soap and water. Then apply an antiseptic to the bite area.
- Save the tick in a small container with the date, the body location of the bite, and where you think the tick came from.
- Notify the SSHC of any tick bites as soon as possible.

Poisonous Plants. Poison ivy, poison oak, and poison sumac are identified by three or five leaves radiating from a stem. Poison ivy is in the form of a vine while oak and sumac are bush-like. All produce a delayed allergic hypersensitivity. The plant tissues have an oleoresin, which is active in live, dead, and dried parts. The oleoresin may be carried through smoke, dust, contaminated articles, and the hair of animals. Symptoms usually occur 24 to 48 hours after exposure resulting in burning or stinging, and weeping and/or crusted blisters. Should exposure to any of these plants occur, wash the affected area with a mild soap and water, but do not scrub the area. The best antidote for poisonous plants is recognition and avoidance.

Snakes. Poisonous snakes indigenous to the Virginia tidewater area include Cottonmouth, Copperhead, and Can Break Rattlesnakes. The degree of toxicity resulting from snakebites depends on the potency of the venom, the amount of venom injected, and the size of the person bitten. Poisoning may occur from injection or absorption of venom through cuts or scratches.

The most effective way to prevent snakebites is to avoid snakes in the first place. Personnel should avoid walking at night or in high grass and under brush. Visual inspection of work areas should be performed prior to activities taking place. The use of leather boots and long pants will

be required, since more than half of all bites are on the lower part of the leg. No attempts at killing snakes should be made; many people are bitten in such an attempt.

Flying Insects. Flying insects such as mosquitos, wasps, hornets, and bees may be encountered while site activities occur. Table 4-3 discusses problems associated with them.

Table 4-1
Minimum Clearance from Energized Overhead Electric Lines

Nominal System Voltage	Minimum Required Clearance
0-50 kV	10 feet
51-100 kV	12 feet
101-200 kV	15 feet
201-300 kV	20 feet
301-500 kV	25 feet
501-750 kV	35 feet
751-1000 kV	45 feet

Table 4-2
Cold Weather Work/Warm-Up Regimen^a

Air Temperature - Clear Sky	Wind Speed									
	Not Noticeable		5 mph		10 mph		15 mph		20 mph	
	Maximum Work Period	Number of Breaks	Maximum Work Period	Number of Breaks	Maximum Work Period	Number of Breaks	Maximum Work Period	Number of Breaks	Maximum Work Period	Number of Breaks
-15°F to -19°F	normal breaks	1	normal breaks	1	75 min.	2	55 min.	3	40 min.	4
-20°F to -24°F	normal breaks	1	75 min.	2	55 min.	3	40 min.	4	30 min.	5
-25°F to -29°F	75 min.	2	55 min.	3	40 min.	4	30 min.	5	nonemergency work should cease	
-30°F to -34°F	55 min.	3	40 min.	4	30 min.	5	nonemergency work should cease			
-35°F to -39°F	40 min.	4	30 min.	5	nonemergency work should cease					
-40°F to -44°F	30 min.	5	nonemergency work should cease							
-45°F and below	nonemergency work should cease									

^aThis table applies to moderate to heavy work activities with warm-up breaks, in a warm location, of 10 minutes. For light to moderate work, use the table entry which is one temperature range warmer than the actual temperature range.

Table 4-3
Flying Insects

Organism	Description	Habitat	Problem	Severity	Protection
Hornet	One inch long with some body hair. Abdomen is mostly black.	Round, paperlike nest hanging from trees, shrubs, or under eaves of buildings.	One nest may contain up to 100,000 hornets which will attack in force at the slightest provocation.	Severe pain, allergic reactions similar to bees.	Do not come near or disturb nest. If a hornet investigates you, do not move.
Mosquito	Small, dark, fragile body with transparent wings. From 1/8 to 1/4 inch long.	Where water is available for breeding.	Bites and sucks blood. Itching and swelling result.	Can transmit encephalitis and other diseases. Scratching causes secondary infections.	Use plenty of insect repellent and wear gloves. Stay in windy areas.
Wasp	Very thin waist. Color can be black, yellow or orange with stripes.	Underground nest. Paperlike honeycomb nest in abandoned buildings hollow trees, etc.	Stings. Some species will attack if you get too close to the nest.	Severe pain, allergic reactions similar to bees. Can be fatal.	Avoid Nest. Do not swat at them.
Bee	Generally has yellow and black stripes and two pair of wings.	Hollow logs, underground nest, old buildings,	Stings when annoyed. Leaves venom sac in victim.	If person is allergic, nausea, shock, constriction of the airway can result. Death may result.	Be careful and watch where you walk. Cover exposed skin. Avoid areas where bees are swarming. Avoid wearing sweet fragrances and bright clothing. Move slowly or stand still when bees are swarming about you.

5.0 Personnel Protective Equipment

5.1 Respiratory Protection

Respiratory protective equipment shall be Mine, Safety, and Health Administration (MSHA)/NIOSH-approved and respirator use shall conform to American National Standards Institute (ANSI) Z88.2 and OSHA 29 CFR 1910.134 requirements. IT Procedure HS601 further defines the respiratory protection program which details the selection, use, inspection, cleaning, maintenance, storage, and fit testing of respiratory protective equipment.

All personnel (including visitors) performing on-site activities, and using a negative pressure respirator must have successfully passed a qualitative respirator fit test in accordance with OSHA 29 CFR 1910.134 within the last 12 months. Documentation of fit testing is the responsibility of each employer. Fit testing and any training related to respiratory protection for IT personnel will be documented on the IT Respiratory Training Completion Form.

5.2 Levels of Protection

The following is a brief description of the personal protective equipment which may be required during various phases of the project. The EPA terminology for protective equipment will be used; Levels A, B, C and D. At a minimum, four sets of appropriate personal protective equipment will be maintained at the site for USN visitor usage.

5.2.1 Level A Protection (Level A Protection use is not anticipated during this project.)

Use of Level A personal protective equipment requires authorization from IT Corporate Health and Safety staff.

5.2.2 Level B Protection

Level B Protection is used when:

- A substance has been identified and requires a high level of respiratory protection but less skin protection than Level A
- Concentrations of chemicals in the air are immediately dangerous to life or health (IDLH) or above the maximum use limit of an air purifying respirator (APR) with full-face mask

- Oxygen deficient atmospheres (<20.0 percent) or potentially oxygen deficient atmospheres exist
- Confined space atmospheric test results require it.

Level B PPE at a minimum shall consist of:

- Surgical scrubs
- Saranex-coated tyvek coveralls with hoods and elastic wrists and ankles
- Steel-toed Neoprene boots
- Latex gloves (inner)
- Nitrile gloves (outer) or heavy butyl gloves when handling drums
- Pressure demand self-contained breathing apparatus (SCBA) or airline system with egress bottle
- Hearing protection (if necessary)
- Hard hat
- Ankles, wrists, and respirator taped with duct tape.

5.2.3 Level C Protection

Level C protection shall be used when:

- The same level of skin protection as Level B, but a lower level of respiratory protection is required
- The types of air contaminants have been identified, concentrations have been measured, and an APR is available that can remove contaminants
- The substance has adequate warning properties and all criteria for the use of an APR has been met.

Level C protective equipment at a minimum shall consist of:

- Surgical scrubs
- Steel-toed Neoprene boots

- Polyethylene-coated Tyvek coveralls with hoods and elastic wrists and ankles
- Latex gloves (inner)
- Nitrile gloves (outer)
- Full-face APR with organic vapor high efficiency particulate air (HEPA) combination cartridges
- Hearing protection (if necessary)
- Hard-hat
- Duct tape openings (ankles, wrists, and respirator).

5.2.4 Level D Protection

Level D PPE shall be used when:

- The atmosphere contains no known hazard
- Work functions preclude significant splashes, immersions, or the potential for unexpected inhalation of, or contact with, hazardous concentrations of harmful chemicals
- Atmospheric concentrations of contaminants are less than the TLV/permissible exposure limit (PEL).

Level D PPE at a minimum shall consist of:

- Standard work uniform or coveralls
- Steel-toed work boots
- Safety glasses
- Hearing protection (if necessary)
- Splash shield (if necessary)
- Hard-hat
- Leather palm gloves when handling materials.

Modified Level D1 PPE at a minimum shall consist of:

- Standard work uniform or coveralls
- Steel-toed neoprene boots
- Tyvek coveralls with hoods and elastic wrists and ankles
- Latex gloves (inner)
- Nitrile gloves (outer)
- Hearing protection (if necessary)
- Splash shield (if necessary)
- Hard-hat

- Safety glasses
- Duct tape openings (ankles, wrists).

Modified Level D2 PPE at a minimum shall consist of:

- Standard work uniform or coveralls
- Latex boot covers
- Steel toed work boots
- Safety glasses
- Hearing protection (if necessary)
- Nitrile gloves
- Hard hat.

5.3 Activity Specific Levels of Protection

The required level of protection is specific to the activity being conducted. At Sites 2 and 9 and SSA4 site the initial levels of PPE are as follows:

<u>TASK</u>	<u>ACTIVITY</u>	<u>INITIAL LEVEL OF PPE</u>
1.0	Site Setup	
1.1	Clearing and grubbing	D1-Modified
1.2	Temporary site access road construction	D
1.3	Field office establishment	D
1.4	Work area identification	D2-Modified
1.5	Perimeter security fence erection	D
1.6	Contamination control zone delineation	D2-Modified
1.7	Personnel decontamination facility establishment	D
1.8	Equipment decontamination pad, drum handling area	D
1.9	Roll-off container storage area construction	D
2.0	Site Preparation	
2.1	Field subsurface survey (inside EZ) (outside EZ)	D1-Modified D
2.2	Protection of site features (inside EZ) (outside EZ)	D1-Modified D

<u>TASK</u>	<u>ACTIVITY</u>	<u>INITIAL LEVEL OF PPE</u>
2.3	Erosion and sedimentation control installation (inside EZ) (outside EZ)	D1-Modified D
3.0	Waste Removal	
3.1	Waste removal operations	C
3.2	UXO removal	D1-Modified
3.2	Surface debris removal	D1-Modified
3.4	Railroad ties	D1-Modified
3.5	Drum removal (hazardous drums) (Nonhazardous drums)	B C
3.6	Battery removal (manual removal) (remote removal)	C* D1-Modified
3.7	IT-generated waste removal	D
4.0	Site Restoration	
4.1	Backfill material	D
4.2	Backfill material placement and compaction (during first foot of placement) (after excavation is covered)	D1-Modified D
4.3	Common fill placement (during first foot of placement) (after excavation is covered)	D1-Modified D
4.4	Topsoil placement and final grading	D
4.5	Revegetation	D
4.6	Protection of surfaces	D
5.0	Transportation and Disposal of Waste	
5.1	Temporary storage of contaminated materials (when contact potential exists) (no contact potential exists)	D1-Modified D
5.2	Transportation and disposal.	D

*Saranex Coated Tyvek and heavy butyl gloves will be used for this task.

As site activities progress, levels of PPE are subject to change or to modification. Upgrading of PPE can occur when action levels are exceeded or whenever the need arises to protect the safety

and health of site personnel. Levels of PPE will not be downgraded without prior approval from the SHM and RPM.

5.4 Donning/Doffing PPE

All persons entering an EZ shall put on the required PPE in accordance with the requirements of this SSHP. When leaving the EZ, PPE will be removed in accordance with the procedures listed, in order to minimize the spread of contamination.

5.4.1 Donning Procedures

These procedures are mandatory, for all personnel entering a EZ:

- Remove bulky outerwear. Remove street clothes and store in clean location.
- Put on disposable or IT issue (and laundered) work clothes or coveralls.
- Put on the required chemical protective coveralls.
- Put on chemical protective boots or boot covers.
- Tape the legs of the coveralls to the boots with duct tape.
- Put on chemical protective gloves.
- Tape the wrists of the protective coveralls to the gloves.
- Don respirator if required, and perform appropriate fit check or inspection.
- Put hood or head covering over head and respirator straps. Tape the hood to the face of the respirator.
- Don remaining PPE, such as safety glasses or goggles and hard hat.

5.4.2 Doffing Procedures

The following procedures are mandatory for all personnel exiting an EZ.

- Upon entering the CRZ, rinse contaminated material from the boots or remove contaminated boot covers.
- Clean reusable protective equipment (i.e., face shields, hard hats, etc.).

- Remove protective garments, equipment, leaving inner gloves on. All disposable clothing should be placed in plastic bags, and labeled as "contaminated waste".
- Remove respirator equipment
- Remove and dispose of inner gloves
- Wash face and neck.
- Proceed to clean area and dress in clean clothing.
- Clean and disinfect respirator with new latex gloves on and prepare for next use
- Proceed to the sign-out point.

All disposable equipment, garments, and PPE shall be bagged in a 6-mil plastic bag, and properly labeled for disposal.

6.0 Contamination Control Zones

The primary purpose for contamination control zones is to establish the hazardous area perimeter, to reduce migration of contaminants into clean areas, and to prevent access or exposure to hazardous materials conditions by unauthorized persons. At the end of each workday, the entire site should be secured or guarded to prevent unauthorized entry. Site work zones will include a Support Zone, Contamination Reduction Zones, and Exclusion Zones. The preliminary layout of anticipated site work zones can be found in Figures 1, 2, and 3 of the RAWP.

6.1 Support Zone

The uncontaminated SZ or clean zone will be the area outside the EZ and CRZ and within the geographic perimeters of the site. The area is used for staging of materials, parking of vehicles, office facilities, sanitation facilities, and receipt of deliveries. Personnel entering this zone may include delivery personnel, visitors, security guards, etc., who will not necessarily be permitted in the EZ. All personnel arriving in the SZ will upon arrival, report to the site office and sign the site entry/exit log.

6.2 Contamination Reduction Zone

Personnel and equipment decontamination will be performed in a CRZ. All personnel entering or leaving the EZ will pass through this area in order to prevent any cross-contamination and for the purpose of accountability. Personal protective outer garments and respiratory protection will be removed in the CRZ and properly labeled. All water generated from equipment and personal decontamination will be contained on site, sampled, and disposed of using an appropriate method.

6.3 Exclusion Zone

An EZ is the area where contamination does or could occur during site activities. This zone has the highest potential for exposure to the contaminants by contact, ingestion, or inhalation. All employees will use proper PPE when working in these areas. EZ's will be defined areas where there is a possible respiratory and/or contact hazard. The EZ consists of the existing waste areas at Sites 2 and 9 and SSA4 and the drum handling and roll-off container storage areas at Site 2 and SSA4. The location of each EZ will be identified by fencing or other appropriate means. An entry log is kept daily which records the time of entry and exit from the EZ for each person.

6.4 Emergency Entry and Exit

Maps of these sites and surrounding areas are provided in Figures 1, 2, and 3 of the RAWP. Contamination control zones, evacuation routes, and emergency equipment locations will be included on the map once initial site setup is complete. During an emergency the evacuation routes noted on the site map should be followed. If conditions such as wind direction or physical hazards do not allow access to the prescribed evacuation routes, evacuate by the safest means available and decontaminate to the greatest extent possible. Additional emergency procedures can be found in Chapter 11.0.

6.5 Site Entry Requirements

In order to allow an individual into potentially contaminated areas of the site (CRZ and EZ) he/she must meet the following requirements.

- Documentation of completing training requirements as described in Chapter 9.0 (including review of this SSHP and signing off as such).
- Documentation of completing medical surveillance requirements as described in Chapter 10.0.
- Respiratory fit testing as necessary (Section 5.1).
- A hazard briefing which includes current operations at the site, hazards that exist and control measures to follow.
- Signing the site entry log.

6.6 Posting Site

Appropriate warning signs will be strategically placed where people enter the EZ and CRZ. Signs should read "DANGER-AUTHORIZED PERSONNEL ONLY, PERSONAL PROTECTIVE EQUIPMENT REQUIRED BEYOND THIS POINT" or similar. Signs may be more hazard specific as necessary. Additional signs will be posted at the perimeter of the site to alert passersby of potential dangers.

7.0 Decontamination

In general, everything that enters an EZ at this site must either be decontaminated or properly discarded upon exit from an EZ. All personnel must enter and exit an EZ through a CRZ. Prior to demobilization from a particular EZ, contaminated equipment will be decontaminated and inspected by the SSHC before it is moved into the SZ. This inspection shall be noted in the daily log.

The type of decontamination solution to be used is dependent on the type of contaminant. The decontamination solution anticipated for use at Sites 2 and 9 and SSA4 will be soap and water.

7.1 Procedures for Equipment Decontamination

Any item or vehicle taken into an EZ must be assumed to be contaminated and must be carefully inspected and/or decontaminated prior to leaving that particular EZ. A visual inspection of the frame and tires of all vehicles and equipment leaving an EZ will be completed. In order for a vehicle/equipment to pass inspection it must be in a broom-clean condition, water washed, and free of loose dirt or sludge material on tailgates, axles, wheels, etc.

An equipment decontamination area will be established in the CRZ. This area will be utilized to remove soil from all equipment leaving the work area. Decontamination procedures will consist of washing equipment to remove mud and/or dirt. A special "clean area" will be utilized by personnel who must come in contact with equipment during vehicle maintenance and repair. All equipment requiring maintenance or repair will be staged in a CRZ prior to servicing.

Equipment wash water residues will be contained on site, sampled, and disposed of in an appropriate manner.

Personnel assigned to vehicle decontamination will wear the protective equipment, clothing, and respiratory protection consistent with this SSHP. Seats and flooring in equipment and vehicles that are to be used in the EZ will be covered to the greatest extent possible with disposable polyethylene.

7.2 Procedures for Personnel Decontamination

These decontamination procedures apply to all personnel exiting an EZ. A field shower trailer will be established at each site for personnel decontamination. These are the minimum acceptable requirements:

- ***Station 1: Equipment Drop***
Deposit equipment used on site (tools, sampling devices and monitoring instruments, radios, etc.) on plastic drop cloths. These items must be decontaminated or discarded as waste prior to removal from an EZ.
- ***Station 2: Outer Boot and Glove Removal***
Remove outer boots and then gloves. If outer boots and gloves are disposable, deposit in container with plastic liner. If nondisposable, store in a clean dry place after cleaning.
- ***Station 3: Outer Garment Removal***
Remove hard hat and coveralls. Deposit disposable coveralls in a container lined with plastic. Decontaminate or dispose of splash suits as necessary. Wipe clean and store hard hat.
- ***Station 4: Respiratory Protection Removal***
Remove respirator face piece. APR cartridges will be discarded when breakthrough occurs or once per shift. Wash and rinse respirator after each use. Wipe off and store respirator in a clean, dry location.
- ***Station 5: Inner Glove Removal***
Remove inner gloves and deposit in container for disposal.
- ***Station 6: Field Wash***
Thoroughly shower at the end of each shift.

8.0 Exposure Monitoring/Air Sampling Program

According to 29 CFR 1926.65(h) Air Monitoring shall be used to identify and quantify airborne levels of hazardous substances and health hazards in order to determine the appropriate level of employee protection needed on site. The following sections apply unless the SHM deems that monitoring for a specific activity may be discontinued or omitted.

8.1 Routine Air Monitoring Requirements

- Upon initial entry to rule out IDLH conditions
- When the possibility of an IDLH condition or flammable/explosive atmosphere has developed
- When work begins on a different portion of the site
- Contaminants other than those previously identified are being handled
- A different type of operation is initiated
- Employees are handling leaking drums or containers or working in areas with obvious liquid contamination
- During confined space work
- When respiratory protection is being used.

8.2 Site Specific Air Monitoring/Sampling Requirements

Measurements of airborne VOCs will be conducted in the work area by using an HNu photoionization analyzer with an 11.7 eV lamp. VOCs will be monitored in the breathing zones of employees.

Measurements of oxygen and combustible gases will be made using a combination oxygen/combustible gas monitor.

Real-time air monitoring will be performed for total airborne particulates using a Miniram aerosol monitor. Air monitoring results will be used to determine the effectiveness and/or need for dust

control methods and to trigger action levels as specified in Table 8-1. The frequency and location of air monitoring activities can be found in Table 8-2.

Drums and soil will be screened for ionizing radiation using a radiation survey meter. Detection of activity above background levels will initiate a stoppage of work until the SHM is consulted. Readings greater than 1 millirad per hour will require that contact be made with the NWS Yorktown EOD Detachment prior to continuance of work.

All air monitoring equipment will be maintained and calibrated according to the manufacturer's recommendations. Calibration will be done before and after use each day and under the approximate environmental conditions the instrument will be used. All air monitoring activities will be documented on the equipment calibration log.

If an instrument is found to be inoperative or suspected of giving erroneous readings, the SSHC shall be responsible for immediately removing the instrument from service and obtaining a replacement unit. The specific IT or subcontractor operation for which this equipment is essential shall cease until an appropriate replacement unit is obtained. The SSHC will be responsible for ensuring a replacement unit is obtained and/or repairs are initiated on the defective equipment.

When applicable, only manufacturer-trained and/or authorized IT personnel will be allowed to perform instrument repairs or preventive maintenance.

8.3 Other Hazardous Conditions

The SSHC will take affirmative action to limit exposures. If unknown chemicals or contamination is encountered, operations will cease until the situation is evaluated. The SSHC will contact the SHM to evaluate any potentially hazardous situations, or any situation with elevated contamination levels. Operations will only be resumed if they can be accomplished in a safe manner.

8.4 Record Keeping

The SSHC or his designee will be responsible for establishing and maintaining records of all required monitoring as described below:

- Date, time, location, pertinent task, and exposure information
- Description of the analytical methods, equipment used, calibration data

- Type of PPE worn
- Engineering controls used to reduce exposure
- Sampling location
- Work operations taking place during monitoring
- Meteorological data
- Signature of analyst/sample collector.

**Table 8-1
Action Levels**

When in Level B PPE

Analyte	Action Level	Required Action
Dust	$\geq 5 \text{ mg/m}^3$	Stop work*/initiate dust suppression
Unknown VOC's	$\geq 1000 \text{ ppm}$ above background in breathing zone (BZ)	Stop work*
O ₂	$\geq 23\%$ or $\leq 20\%$	Stop work*
LEL	$\geq 10\%$ of LEL	Stop work*
Radiation	> background	Stop work*

When in Level C PPE

Analyte	Action Level	Required Action
Dust	$\geq 5 \text{ mg/m}^3$	Stop work*/initiate dust suppression
Unknown VOC's	$\geq 100 \text{ ppm}$ above background in BZ	Level B PPE
O ₂	$\geq 23\%$ or $\leq 20\%$	Stop work*
LEL	$\geq 10\%$ of LEL	Stop work*
Radiation	> background	Stop work*

When in Level D Modified/D PPE

Analyte	Action Level	Required Action
Dust	$\geq 1 \text{ mg/m}^3$	Level C PPE/initiate dust suppression
Unknown VOC's	$\geq 1 \text{ ppm}$ above background in BZ	Level C PPE
O ₂	$\geq 23\%$ or $\leq 20\%$	Stop work*
LEL	$\geq 10\%$ of LEL	Stop work*
Radiation	> background	Stop work*

When in Support Zone

Analyte	Action Level	Required Action
Dust	$\geq 0.5 \text{ mg/m}^3$	Initiate dust suppression
Unknown VOC's	$\geq 1 \text{ ppm}$ above background in BZ	Evacuate support zone and re-establish perimeter of EZ.

*Contact with the SHM must be made prior to continuance of work. The SHM may then initiate perimeter/integrated air sampling along with additional engineering controls.

Four instantaneous peaks in any 15-minute period or a sustained reading for 5 minutes in excess of the action level will trigger a response.

No one is permitted to downgrade levels of PPE without authorization from the SHM.

Table 8-2
Air Monitoring Frequency and Location

WORK ACTIVITY	INSTRUMENT	FREQUENCY	LOCATION
Clearing and Grubbing	0./LEL H _{Nu} Miniram Radiation	N/A Periodically Continuously Periodically	N/A BZ of Employees Perimeter of Work Area Surface of Work Area
Temporary Site Access Road Construction	0./LEL H _{Nu} Miniram Radiation	N/A N/A Continuously N/A	N/A N/A Perimeter of Work Area N/A
Field Office Establishment	0./LEL H _{Nu} Miniram Radiation	N/A N/A N/A N/A	N/A N/A N/A N/A
Work Area Identification	0./LEL H _{Nu} Miniram Radiation	N/A Periodically Continuously N/A	N/A BZ of Employees Perimeter of Work Area N/A
Perimeter Security Fence Erection	0./LEL H _{Nu} Miniram Radiation	N/A N/A N/A N/A	N/A N/A N/A N/A
Contamination Control Zone Delineation	0./LEL H _{Nu} Miniram Radiation	N/A N/A Continuously N/A	N/A N/A Perimeter of Work Area N/A
Personnel Decontamination Facility Establishment	0./LEL H _{Nu} Miniram Radiation	N/A N/A N/A N/A	N/A N/A N/A N/A
Equipment Decontamination Pad, Drum Handling Area, and Roll-Off Container Storage Area Construction	0./LEL H _{Nu} Miniram Radiation	N/A N/A Continuously N/A	N/A N/A Perimeter of Work Area N/A
Field Subsurface Survey	0./LEL H _{Nu} Miniram Radiation	N/A Periodically Continuously N/A	N/A BZ of Employees Perimeter of Work Area N/A
Protection of Site Features	0./LEL H _{Nu} Miniram Radiation	N/A N/A Continuously N/A	N/A N/A Perimeter of Work Area N/A
Erosion and Sedimentation Control Installation	0./LEL H _{Nu} Miniram Radiation	Periodically Periodically Continuously N/A	Soil Surface Level BZ of Employees Perimeter of Work Area N/A

Table 8-2
(Continued)

WORK ACTIVITY	INSTRUMENT	FREQUENCY	LOCATION
Waste Removal Operations	0./LEL HNU Miniram Radiation	Periodically Periodically Continuously Periodically	Surface of Waste BZ of Employees Perimeter of Work Area Surface of Waste
UXO Removal	0./LEL HNU Miniram Radiation	N/A Periodically Continuously N/A	N/A BZ of Employees Perimeter of Work Area N/A
Surface Debris Removal	0./LEL HNU Miniram Radiation	N/A Periodically Continuously N/A	N/A BZ of Employees Perimeter of Work Area N/A
Railroad Ties	0./LEL HNU Miniram Radiation	N/A Periodically Continuously N/A	N/A BZ of Employees Perimeter of Work Area N/A
Drum Removal	0./LEL HNU Miniram Radiation	Continuously Continuously Continuously Periodically	Surface of Drum Contents BZ of Employees Perimeter of Work Area Surface of Drum Contents
Battery Removal	0./LEL HNU Miniram Radiation	N/A Periodically Continuously N/A	N/A BZ of Employees Perimeter of Work Area N/A
IT-Generated Waste Removal	0./LEL HNU Miniram Radiation	N/A N/A N/A N/A	N/A N/A N/A N/A
Backfill Material	0./LEL HNU Miniram Radiation	Periodically Periodically Continuously N/A	Surface of Excavation BZ of Employees Perimeter of Work Area N/A
Backfill Material Placement and Compaction	0./LEL HNU Miniram Radiation	N/A N/A Continuously N/A	N/A N/A Perimeter of Work Area N/A
Common Fill Placement	0./LEL HNU Miniram Radiation	N/A N/A Continuously N/A	N/A N/A Perimeter of Work Area N/A
Topsoil Placement and Final Grading	0./LEL HNU Miniram Radiation	N/A N/A Continuously N/A	N/A N/A Perimeter of Work Area N/A
Revegetation	0./LEL HNU Miniram Radiation	N/A N/A N/A N/A	N/A N/A N/A N/A

Table 8-2
(Continued)

WORK ACTIVITY	INSTRUMENT	FREQUENCY	LOCATION
Protection of Surfaces	0./LEL HNU Miniram Radiation	N/A N/A N/A N/A	N/A N/A N/A N/A
Wetlands Restoration	0./LEL HNU Miniram Radiation	N/A N/A N/A N/A	N/A N/A N/A N/A
Temporary Storage of Contaminated Materials	0./LEL HNU Miniram Radiation	N/A Periodically Periodically N/A	N/A BZ of Employees Perimeter of Work Area N/A
Transportation and Disposal	0./LEL HNU Miniram Radiation	N/A N/A N/A N/A	N/A N/A N/A N/A

9.0 Training Requirements

9.1 General Training

The SSHC or a designated representative will be responsible for informing all personnel performing on-site activities and all visitors of the contents of this SSHP and ensuring that each person signs the SSHP Acknowledgement Form. By signing this form, individuals recognize the hazards present on site and the policies and procedures required to minimize exposure to hazards or adverse effects caused by hazards. Documentation of certification of training requirements will be reviewed by the SSHC, provided to the SS, and filed on site.

9.2 Hazardous Waste Operations Training

IT trains all field personnel according to 29 CFR 1926.65 before their initial assignment to any project. The following criteria is used to determine the level of training for IT employees, visitors, and subcontractors engaged in site activities.

- Personnel engaged in hazardous substance removal or other activities which expose or potentially expose them to hazardous substances and health hazards shall receive a minimum of 40 hours of instruction off site, and 3 days of supervised field experience.
- Personnel who perform limited activities at the site and are not potentially exposed to contaminate levels above the PEL shall receive a minimum of 24 hours of instruction off site, and 1 day of supervised field experience.

9.2.1 40-Hour Training

The following is a general list of topics covered in the 40-hour course:

- General site safety
- Physical hazards (fall protection, noise, heat stress, cold stress)
- Key management positions responsible for site safety and health
- Safety, health and other hazards
- Use of PPE

- Work practices by which employees can minimize risks from hazards
- Safe use of engineering controls and equipment on site
- Medical surveillance requirements including recognition of symptoms and signs which might indicate over exposure to hazards
- Worker Right-to-Know (Hazard Communication)
- Engineering controls and safe work practices
- Components of the site safety and health program
- Decontamination practices for personnel and equipment
- Confined space entry procedures
- Emergency Response Procedures.

9.2.2 24-Hour Training

The same topics presented in the 40-hour course are reviewed in the 24-hour course with less time spent on each topic.

9.2.3 Supervisor Training

Site supervisory personnel shall receive eight additional hours of specialized training on program supervision. The following topics are discussed:

- Overall safety and health program
- Personal protection equipment program
- Spill containment program
- Air monitoring techniques.

9.2.4 Refresher Training

Personnel covered by Sections 9.2.1 and 9.2.2 are required to complete 8 hours of refresher training annually on the following topics:

- Safe work practices
- Chemical hazard awareness
- Hearing conservation

- Hazard communication
- Respirator refresher
- Confined space entry procedures update.

9.2.5 Supervised Field Experience

Personnel covered by Section 9.2.1 will receive a minimum of 3 days actual field experience under the direct supervision of a trained, experienced supervisor. A minimum of 1 day is required for personnel who fall under the requirements of 9.2.2. This supervised field experience will be documented on the IT On-the-Job Training Record.

9.2.6 Exempt Personnel

Site access by personnel making deliveries or performing repairs to utilities, public or government officials, visitors, or local residents will be limited to support areas only. These persons will not be required to comply with the medical and training requirements as previously defined. SZ access will be limited to designated work, delivery, or observation areas to minimize any potential exposure to site contaminants. Site observation areas will be located upwind from predominant wind directions, and access to observations areas may be restricted by weather conditions or site activities. Authorization for limited site access will be determined on a case-by-case basis by the SSHC in consultation with the SHM and PM. Site access for such personnel will be limited to areas with no potential for exposure during routine operations. Exempt personnel will be escorted on site and will be strictly prohibited from entering the CRZ or EZ.

9.3 Tailgate Safety Meetings

The SSHC conducts a tailgate safety meeting the beginning of each shift or whenever new employees arrive at the job site once the job commences. The topics discussed at the tailgate safety meeting include safety and health considerations for the day's activities, necessary protective equipment, problems encountered and new operations. Attendance records and meeting notes are maintained with the project files.

9.4 Site Specific Training

IT provides site specific training for all personnel assigned to projects falling within the scope and application of 29 CFR 1926.65. The content of the training will be derived from information contained within this SSHP. All workers must also read and sign the SSHP acknowledging

acceptance of site rules and understanding of site hazards before being permitted to enter an EZ. Emergency procedures contained within Chapter 11.0 will be rehearsed during this training.

9.5 Hazard Communication

All personnel performing field activities shall receive hazardous communication training. IT personnel have received basic hazard communication training which involves a review of the IT written hazard communication program, Material Safety Data Sheets (MSDS), container labeling, and chemical health hazards. Personnel shall be trained on the hazards of chemicals on site by reviewing Section 3.2.

9.6 First Aid and CPR

At least two persons trained in a minimum of both American Red Cross first-aid techniques and CPR will be on site whenever activities occur. Refresher training in CPR is required annually and every 3 years for first aid. These two employees will meet both the training and vaccination requirement of IT's Bloodborne Pathogen Exposure Control Plan.

10.0 Medical Surveillance

IT will utilize the services of a Board-Certified Occupational Medicine physician for the medical surveillance requirements of this project. Dr. David Barnes (below) will review all medical examinations and will be available for medical consultation on an "as-needed" basis.

Dr. David Barnes
4360 Chamblee Dunwoody Road, Suite 207
Atlanta, Georgia 30341
(404) 455-0818 and (800) 229-3674

10.1 Medical Examination

As required by IT Policy and Procedure HS100 all personnel on site working within a CRZ or EZ will have successfully completed a preplacement or periodic/updated physical examination. The contents of this examination has been determined by Dr. David Barnes.

10.1.1 Preplacement Exam

This examination has been designed to meet 29 CFR 1926.65 requirements for hazardous waste site operations.

The IT medical surveillance program examination at a minimum consists of:

- Medical and occupational history questionnaire which includes information on past gastrointestinal, hematologic, renal cardiovascular, reproductive, immunological and neurologic problems.
- Physical examination.
- Blood pressure measurements.
- Complete blood count (CBC) and differential to include hemoglobin and hematocrit determinations, red cell indices, and smear of peripheral morphology.
- Blood urea nitrogen and serum creatinine.
- Sequential Multiple Analyzer Computer (SMAC) 24
- Pulmonary function test.

- Audiogram.
- EKG for employees over 35 years old or when other complications indicate the necessity.
- Drug and alcohol screening.
- Visual acuity.

The following information is, or has been, provided to the examining physician:

- Copy of 29 CFR 1926.65 and Appendices
- Description of employee's duties
- Anticipated chemical exposure and levels
- Description of the PPE to be used
- Information from previous medical exams.

The medical surveillance provided to the employee includes a judgment by the medical examiner of the ability of the employee to use either positive- or negative-pressure respiratory equipment. Any employee found to have a medical condition which could directly or indirectly be aggravated by exposure to these chemical substances or by the use of respiratory equipment will not be employed for the project. A copy of the medical examination is provided at the employee's request.

The employee will be informed of any medical conditions that would result in work restriction or that would prevent them from working at hazardous waste sites.

10.1.2 Annual Exam

All IT employees receive an annual update exam meeting the requirements of 29 CFR 1926.65. The results of these exams are compared to previous results and the baseline physical to determine if any effects due to exposure have occurred. Appropriate actions are taken as recommended by the physician should the results indicate an exposure; otherwise, employees are cleared for continued work.

10.1.3 Exit Exam

IT offers exit physical exams for all employees involved in the medical surveillance program who are leaving the company for any reason to ensure they are in good health.

10.2 Subcontractor Requirements

Subcontractors will certify that all their employees have successfully completed a physical examination by a qualified physician on the Subcontractor Certification Form (Appendix I). The physical examinations will meet the requirements of 29 CFR 1926.65 and 29 CFR 1910.134 Respiratory Protection. Subcontractors will also supply copies of the medical examination certificate for each employee they have on site.

10.3 Medical Records

Medical and personal exposure monitoring records will be maintained according to the requirements of 29 CFR 1926.65 and will be kept for a minimum of 30 years. Confidentiality of employee medical records will be maintained. The written medical opinion from the occupational physician will be made available upon request to the RPM for any site worker.

10.4 Medical Restrictions

When a medical care provider identifies a need to restrict work activity, the employee's home office will communicate the restriction to the employee, the SS, SSHC, and the SHM. The terms of the restriction will be discussed with the employee and the SS. Every attempt will be made to keep the employee working, while not violating the terms of the medical restriction.

11.0 Emergency Response Plan and Contingency Procedures

Site personnel must be prepared to respond and act quickly in the event of an emergency or accidental contaminant release. Emergency preparedness and response procedures will aid in protecting site workers and the surrounding environment. Preplanning measures will include employee training, fire and explosion prevention and protection, chemical spill and discharge prevention and protection, safe work practices to avoid personal injury or exposure, and periodic walk through of emergency response plan procedures with all site personnel.

11.1 Personnel Roles/Lines of Authority

The roles and responsibilities of IT personnel for response to emergencies will be clearly defined and coordinated with IT subcontractors, USN project personnel, and emergency response teams. The responsibilities of specific project individuals and the coordination of outside emergency services are defined as follows:

Site Superintendent/Emergency Coordinator. At all times during scheduled work activities, a designated Emergency Coordinator shall be present on site. This responsibility will be assigned to the SS for this project. This individual will be responsible for implementing these procedures. In most emergency situations, the Emergency Coordinator will be directly responsible for determining appropriate response actions. Depending upon the circumstances and time permitting, the Emergency Coordinator will review proposed response actions with the PM, the SSHC, and the RPM. Specific responsibilities for the Emergency Coordinator include:

- Evaluating and assessing emergency incidents or situations
- Assigning personnel and coordinating response activities on site
- Assuring that field personnel are aware of the potential hazards associated with the site
- Summoning appropriate emergency response teams
- Notifying the PM or, in his absence, the Program Manager of an emergency situation
- Coordinating response to an incident with the RPM

- Assuring that all emergency equipment is routinely inspected and functional
- Working with the SSHC regarding the correction of any work practices or conditions that may result in injury to personnel or exposure to hazardous substances
- Assuring that appropriate emergency response agencies are aware of the provisions made herein
- Evaluating the safety of site personnel in the event of an emergency, and providing evacuation coordination, if necessary
- Maintaining site facilities and assisting site personnel in accessing those facilities.

The SS will direct all emergency response activities conducted or managed by IT. In addition to his responsibilities as Emergency Coordinator, the SS is responsible for field implementation and enforcement of health and safety policies and procedures as contained in this SSHP. The SS will be fully trained in health and safety procedures and maintain current certification in standard first aid and CPR. Other responsibilities include overall supervision and management of field activities.

Site Safety and Health Coordinator. The SSHC is responsible for implementing, communicating, and enforcing safety and health policies and procedures during the course of the project. The SSHC will review the fitness and training records of all field personnel for compliance with the established requirements and will assist in arranging proper training and medical examinations. He will also assist in evaluating safety and health concerns with respect to environmental releases and emergency response actions.

Project Manager. The PM will provide support to emergency responders and dedicate appropriate project resources to the response effort. If required, the PM will mobilize additional personnel and equipment to the site. The PM will notify and provide the RPM with recommendations concerning any additional action(s) to be taken.

Remedial Project Manager. The RPM will provide field oversight in the event of a spill or discharge. The RPM will also be responsible for contacting and notifying pertinent regulatory agencies concerning emergencies at the site and potential releases.

11.2 List of Emergency Contacts and Notification

The designated Emergency Coordinator and SSHC will be notified immediately in the event of an emergency. The Emergency Coordinator will immediately evaluate the incident and, if necessary, notify the applicable emergency support services. If not previously notified, the PM and the SSHC will be advised of the situation. The SSHC or the Emergency Coordinator will notify the RPM. The RPM will notify other personnel as necessary. Telephone numbers for emergency contact personnel are listed in Table 11.1. The list will be maintained with current contacts, and telephone numbers will be posted along with other emergency phone numbers at all telephone locations at the site.

The information provided to the notified person should include the nature of the incident and the exact location and suspected contaminants or material involved. Information regarding the incident that should be reported to the emergency contacts includes the following:

- Name and telephone number of the individual reporting the incident
- Location and type of incident
- Nature of the incident (fire, explosion, spill, or release) and substances involved
- Number and nature of medical injuries
- Movement or direction of spill/vapor/smoke
- Response actions currently in progress
- Estimate of quantity of any released materials
- Status of incident
- Other pertinent information.

11.3 Hospital Transportation

In the event of physical or chemical injury, the local emergency services shall be summoned for emergency medical treatment and ambulance service. The NWS Yorktown Emergency Medical Service will be contacted in the event of a life threatening injury. The Riverside Hospital will be notified for all other injuries and illnesses.

Hospital transportation routes and maps shall be posted in the project area and in each site vehicle.

11.4 Personal Exposure or Injury

Every precaution will be taken to aid in the prevention of injuries and/or exposure to contaminants. These precautions are detailed in this SSHP and generally consist of the following measures:

- Personnel will be properly trained for their work duties.
- Site personnel will wear appropriate PPE for each specific task or work assignment.
- Site personnel will follow the proper field safety protocols as defined.
- Site controls will be enforced so that only authorized personnel are able to access the work zones.
- Site personnel will be made aware of potential environmental and chemical hazards.
- Real-time air monitoring will be performed to evaluate the effectiveness of engineering controls and levels of personal protection.
- Proper decontamination procedures will be followed for personnel and equipment.

Pertinent information concerning site safety will be discussed daily with site personnel during tailgate safety meetings.

In the event of personal exposure to contaminants, the following general guidelines will be adhered to:

- **Contact/Absorption:** Copious amounts of distilled or tap water will be used to flush, for at least 20 minutes, contaminants from the skin. Start flushing while removing contaminated clothing. If irritation persists, repeat flushing. The condition of the individual will be assessed and transport to a medical center will be arranged, if necessary. Do not transport victim unless the recommended flushing period is completed or flushing can be continued during transport.
- **Inhalation:** The victim will be moved immediately to an area providing fresh air. Decontamination of the victim and artificial respiration will be provided if necessary. The condition of the individual will be assessed and transport to a medical center will be arranged, if necessary.
- **Ingestion:** Immediately contact local poison control center. The victim will be decontaminated, if necessary, and transported to a medical facility.

11.5 Fire Control

In the event of a fire or explosion, or imminent danger of fire or explosion, all activities shall halt, and the local emergency services shall be notified immediately. If it is safe to do so, site personnel may use fire-fighting equipment available on site to remove and isolate flammable or other hazardous materials which may contribute to the fire.

If the fire department has been summoned, upon their arrival, the Emergency Coordinator will advise the fire chief of the location, nature, and identification of the hazardous materials on site.

The following measures will be implemented during site field activities to minimize the risk of fire and/or explosion:

- Smoking is permitted on site only in the designated break areas.
- Waste containers will be used to prevent accumulation of rubbish and trash.
- Materials storage methods will be in accordance with manufacturers' recommendations.
- Flammable liquids will be stored in approved containers and cabinets only.
- All storage, handling, or use of flammable and combustible materials shall be conducted by trained personnel.
- Entry and exit pathways shall be kept clear of debris or obstacles.
- Work areas will be cleared of excess vegetation and obstructions.

11.6 Spills or Leaks

IT will maintain the following equipment and materials on site for use during spill response activities:

- Absorbent booms, pillows, and/or pads
- Granular absorbent material (noncombustible)
- Polyethylene sheeting
- 55-gallon drums
- Shovels and assorted hand tools.

If a hazardous waste spill or material release to the air, soil, or water at the site is observed, IT will immediately notify the RPM. An assessment will be made of the magnitude and potential impact of the release. If it is safe to do so, site personnel will attempt to locate the source of the release, prevent further release, and contain the spilled and/or affected materials as follows:

- The spill or release area will be approached cautiously. Real-time air monitoring will be continuously performed in the spill vicinity.
- Hazards will be identified based on available information from witnesses or material identification documents (placards, MSDSs, logs). The potential hazards will be evaluated to determine the proper personal protection levels, methods, and equipment necessary for response.
- If necessary, the release area will be evacuated, isolated, and secured.
- If possible, spill containment will initially be made without entering the immediate hazard area.
- Entry to the release area will be made with the PPE, personnel, methods, and equipment necessary to perform the work. Hazardous spill containment and collection will be performed in four steps as follows:
 - Contain the spill with absorbent socks, booms, granules, or construction of temporary dikes.
 - Control the spill at the source by plugging leaks, uprighting containers, overpacking containers, or transferring contents of a leaking container.
 - Collect the spilled material with shovels or heavy equipment as necessary.
 - Store the spilled material for further treatment or disposal. Treatment and/or disposal options of the material will depend on the amount and type of material.

If site personnel cannot safely and sufficiently respond to an environmental release, evacuation of the area may be warranted. The decision to evacuate will depend upon the risk of exposure to SZ personnel and the severity of the release.

11.7 Site Evacuation Procedures

The authority to order personnel to evacuate the area rests with project management and health and safety personnel. In the event that site evacuation is required, a continuous, uninterrupted

air horn will be sounded for approximately 1 minute. Air horns will be located in the work areas and SZs. Radio communication will also be used to alert site workers and provide special instructions.

Personnel working in the EZ or CRZ will immediately make their way to the predetermined rally point for a "head count." Depending on the severity of the event and allowable time, personnel exiting the EZ and CRZ may be instructed to forgo or modify decontamination procedures.

Personnel in the SZ will immediately report to the predetermined rally point for a "head count" and further instructions. The Emergency Coordinator and the SSHC will remain in constant radio contact to ensure that evacuation procedures are properly executed.

The evacuation assembly area(s), along with evacuation routes, will be identified by the SSHC on the first day of mobilization. Situations requiring evacuation may include unusually severe weather, fires, or significant chemical spills or releases. In the event of project evacuation, the RPM will be notified immediately.

11.8 Emergency Decontamination Procedures

Treatment of illnesses or injuries to personnel working within the contaminated areas of the site may be more difficult because of protective clothing requirements and the potential for exposure to the contaminants. The SSHC or Emergency Medical Care Provider must quickly assess the extent of the injury or illness of the victim. A determination will be made if lifesaving medical treatment is critical and if personal decontamination procedures will create additional injuries or aggravate the existing condition. Life threatening injuries must receive immediate medical attention. Decontamination procedures may be modified, simplified, or eliminated completely under such circumstances.

The following guidelines are established for responding to minor emergencies where an individual may have been injured or overcome by exposure to a hazardous substance. If a truly serious injury exists, only portions of these guidelines may be appropriate to ensure prompt medical treatment.

- Notify supervisory and safety personnel, and verify that the area is safe to remain.

- Select an emergency decontamination location upwind and/or uphill from any spills, and determine most effective pathway to emergency vehicles.
- Field decontamination should be performed in two stages: washing with soapy water followed by a clear water rinse.
- Upon arrival at the injured party, do a rapid assessment, stop severe bleeding, and carefully move to the CRZ to continue treatment and/or stabilization and arrange for EMS transport as needed.
- Have support personnel perform real-time air monitoring.
- Determine type, nature, and extent of exposure or injury based on mechanism.
- Quickly cut or tear first layer of protective clothing (outer suit) off of the injured party and discard. If cutting, always cut away from the body toward the extremities to avoid inflicting further injury.
- Without delay, efficiently move the injured away from the accident scene, possible contamination, or any hazardous substances. Relocate to a nearby "clean" area to expedite removal of respiratory protection and establish communication.
- If the individual is unconscious, evaluate if an adequate airway exists and breathing and circulation are present (ABCs). If absent, commence rescue breathing or CPR without delay.
- Move the injured person to the decontamination area and transfer responsibilities to support personnel.
- Using soapy solution, support personnel should carefully wash outer garments as needed and rinse.
- Spray outer protective clothing with clear water.
- Quickly remove tape from the injured's wrists and ankles—assume the individual is injured until an assessment indicates otherwise.
- Carefully, but quickly, cut second layer of protective clothing (inner suit, boots, and gloves) off injured party. Always cut away from the body toward the extremities to avoid inflicting further injury.
- Be prepared to turn emergency care over to EMS personnel. Otherwise, administer appropriate standard first aid to injuries.

- Following stabilization of any injuries, monitor and be on alert for shock symptoms, wrap the injured in a warm blanket or other items to conserve body heat, and be prepared for vomiting.
- Cover any contact surfaces of transport equipment with protective sheeting or plastic.
- Inform and present all arriving personnel and the transport crew the nature and extent of injuries and provide MSDS for any potential hazards present.

11.9 Adverse Weather Conditions/Natural Disasters

Adverse weather can take many forms. Thunder and lightning storms, snow storms, hail, freezing rain, and tornados are a few examples. Sudden changes in the weather, extreme weather conditions, and natural disasters can create a number of subsequent hazards. Generally, poor working conditions arise, and slip, trip and fall hazards exist. Natural disasters can create many secondary hazards such as release of hazardous materials to the environment, structure failure and fires.

Routinely monitoring weather conditions and reports may help reduce the impact of severe weather and natural disasters. It may be necessary to halt certain hazardous operations or stop work altogether to allow the situation to pass. The SSHC or his designate must decide what operations, if any, are safe to perform based on existing conditions and anticipated conditions.

The best protection against most severe weather episodes and natural disasters is to avoid them. This means seeking shelter before the storm hits. Sufficient shelter should be identified on site just prior to beginning operations. Stay away from pipes and electrical equipment should lightning be a threat and watch for damage caused by lightning strikes nearby.

If a gale force wind warning is issued by NWS Yorktown, precautions will be taken to minimize any risk to site personnel or property. Precautions will include but are not limited to:

- Closing openings
- Removing loose material
- Securing tools and equipment
- Removing or securing temporary work (i.e., scaffolding).

11.10 Critique and Follow-Up of Emergency Procedures

The RPM shall be verbally notified immediately and receive a written notification within 24 hours of all accidents or incidents including releases of toxic chemicals, fires, or explosions. The report shall include the following items:

- Name, organization, telephone number, and location of the Contractor
- Name and title of the person(s) reporting
- Date and time of accident/incident
- Location of accident/incident (i.e., site location, facility name)
- Brief summary of accident/incident including pertinent details such as type of operation ongoing at time of accident
- Cause of accident/incident, if known
- Casualties (fatalities, disabling injuries)
- Details of any existing chemical hazard or contamination
- Estimated property damage, if applicable
- Nature of damage, effect on contract schedule
- Action taken by Contractor to ensure safety and security
- Other damage or injuries sustained (public or private).

The SS and the SSHC will investigate the cause of the spill or discharge to prevent its reoccurrence. The investigation should begin as soon as practical after the incident is under control but not later than the first work day after the incident. Investigations will follow the procedures described below:

- Interview witnesses and participants as soon as possible or practical.
- Determine the chronological sequence of events (opinions as to cause should not be solicited at this time).
- Note the location, movement, displacement, liquid levels, sounds, noises, or other sensory perceptions experienced by the participants or witnesses.

- Obtain weather data.
- Ascertain the location and position of all switches, controls, etc.
- Verify the condition of all safeguards.

After the facts have been collected, causal factors should be identified. Two causal factors typically exist, apparent and contributing; and there may be several of each. Apparent factors are those which are self-evident or readily deduced. Contributing factors usually become apparent by questioning why the apparent causal factor was allowed to exist.

Table 11-1

Emergency Phone Numbers

NWS Yorktown Fire Department	
Emergency	(804) 887-4911
Nonemergency	(804) 887-7343
NWS Yorktown Police Department	
Emergency	(804) 887-4911
Nonemergency	(804) 887-4677
NWS Yorktown Hospital/Ambulance	
Emergency	(804) 887-4911
Nonemergency	(804) 887-7404
Riverside Hospital	(804) 594-2050
500 J. Clyde Morris Blvd. Newport News, VA 23601	
NWS Yorktown Inclement Weather/Base Closures	(804) 887-7638
NWS Yorktown EOD Detachment	(804) 887-7315
NWS Yorktown Officer of the Day	(804) 887-4545
Poison Control Center	(800) 282-3171
National Response Center	(800) 424-8802
Chemtrec	(800) 424-9555
Project SHM - Warren Houseman	
Day	(412) 372-7701
Evenings	(412) 744-3489
Project Manager - Harry Dravecky	
Day	(412) 372-7701
Evenings	(412) 349-4318
RPM - Greg Hatchett	
Day	(804) 322-4589
Evening	?

12.0 Record Keeping and Data Management

Proper record keeping and data management are essential in the implementation of this SSHP. The forms associated with the record keeping and data management requirements must be completed in an accurate, timely fashion and filed with the appropriate entities. It is the responsibility of the SS to ensure that the forms are properly completed. Completed forms will be kept and maintained by IT. These records shall be maintained for a 5-year period. Subcontractors will also be responsible for keeping a copy of the forms pertaining to their personnel. All site forms and logs have been provided in Attachment G.

12.1 Logs

The SSHC will maintain and complete a daily log for each day's work. The daily log will document chronologically each day's safety and health activities in sufficient detail for future reference as needed. Other relevant data and field information will be recorded on separate log forms for air monitoring, sampling, equipment calibration inspections, and incident reporting.

An EZ sign-in log will be maintained that will provide a project record of the following information for each work shift's activities:

- Worker's name
- Work area
- Duties performed
- Level of protection
- Time in/time out.

All personnel will be required to log in and out of the EZ.

A visitors sign-in log will be maintained in the project office and administration area. Visitors requesting access to hazardous field activities must have appropriate project approval, be medically qualified, and have the health and safety training prerequisites for hazardous waste operations.

An OSHA 2203 Job Safety and Health Protection poster will be clearly displayed in the support area.

12.2 Safety Inspections

IT's accident prevention is centered around the following key procedures:

- Project reporting, investigation, and review of all near misses, incidents, and accidents
- Management reviews of all incident/accident reports, corrective action, and project safety concerns
- Review of project, operations, and construction activities by safety and health professionals.

Safety reviews and inspections are conducted by all tiers of the management structure and are documented. A list of all corrective action items is required to be maintained showing the corrective action, responsible person, and the date action is to be completed. Follow-up inspections are conducted by safety and health personnel to ensure that corrective actions or measures have been implemented.

The SS or PM will inspect the site weekly and interview one or two site workers regarding areas of safety concerns or ideas for safety improvement. Site supervisory personnel will inspect site conditions and activities daily to identify changing conditions or potential hazards. Identified safety and occupational health deficiencies and suggested corrective measures will be brought to the attention of the SSHC. Safety review inspections will be recorded and filed for reference by project management and client personnel.

12.3 Accident Reporting and Investigation

All project personnel are required to report all near misses, injuries, illnesses, and accidents to their immediate supervisor. The SSHC shall immediately arrange appropriate medical care as required. Once immediate medical care for the injured personnel has been accomplished, the SSHC shall complete and submit the appropriate report forms within 24 hours. The appropriate form(s) to be completed may include:

- IT Supervisors Employee Injury Report
- IT Vehicle Accident Report
- IT General Liability, Property Damage, and Loss Report.

Copies of these forms are in Attachment G of this SSHP.

Identified safety and occupational health deficiencies and corrective measures shall be documented and filed on site for reference by the RPM or designated representative.

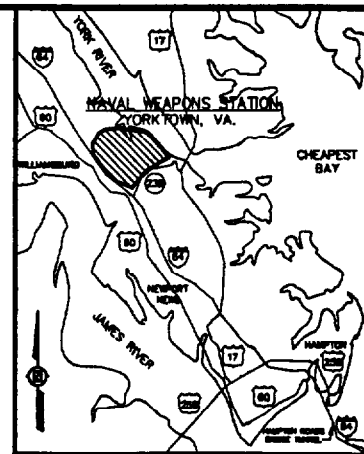
All near misses, injuries, illnesses, and accidents shall be investigated by on-site management personnel. The SS, PM, and SSHC will investigate the conditions which led to the accident. They will document how the accident occurred and identify unsafe acts or conditions that occurred or existed at the time of the accident. Corrective actions will be determined and implemented to prevent recurrence of the accident, and responsibility for implementation of corrective actions will be assigned. The investigation shall be started immediately, and all information shall be collected as soon as possible after the occurrence. The final report and required forms will be submitted to the RPM and other appropriate personnel.

12.4 Phase-Out Report

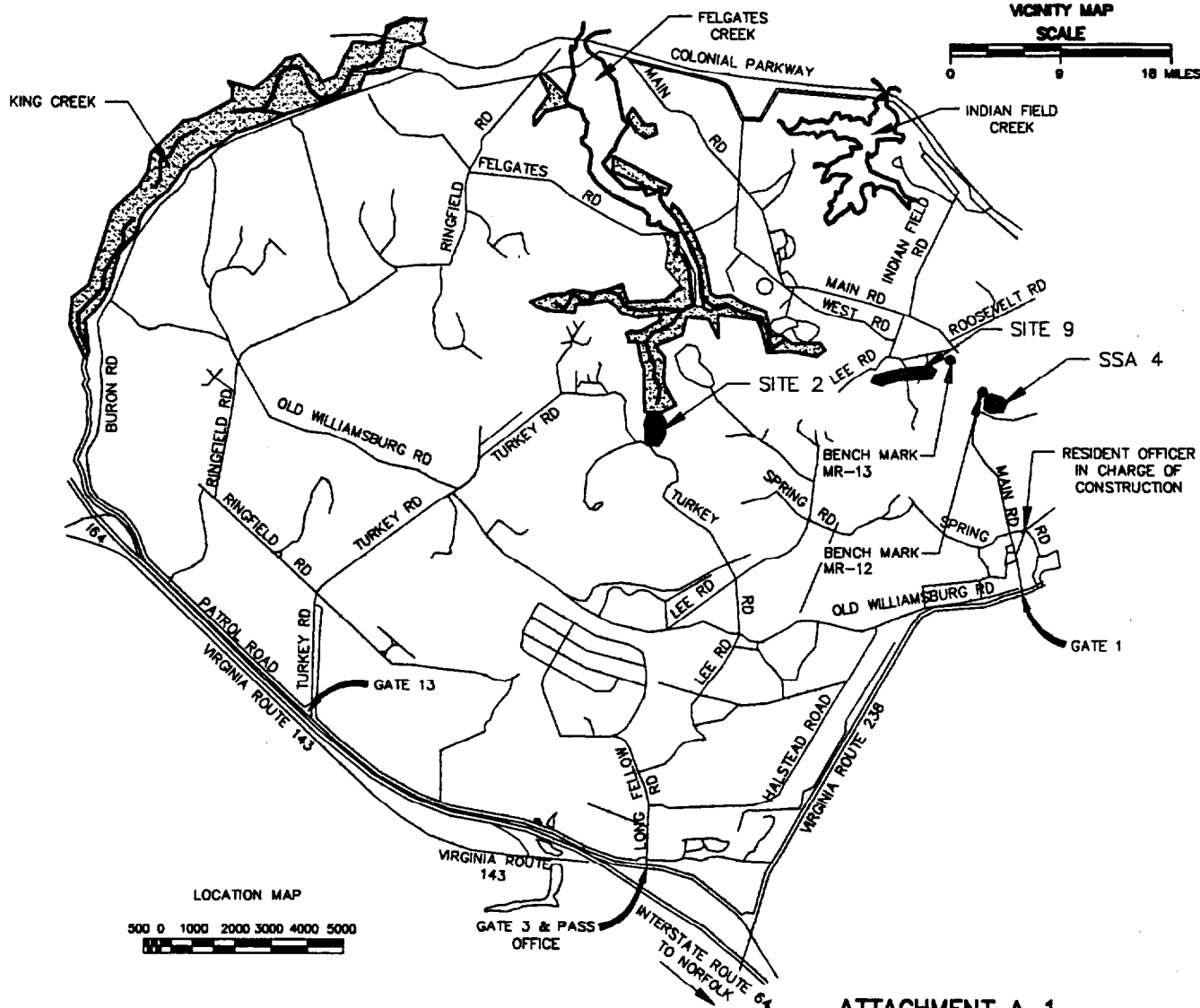
A phase-out report will be prepared by the SSHC and/or SHM. This report shall include a summary of work activities, health and safety activities, and field changes; and copies of medical clearance forms, air monitoring and calibration logs, analytical reports, and custody records. The report will be reviewed and signed by both the SHM and SSHC and will be submitted to the RPM.

ATTACHMENT A
SITE AND HOSPITAL LOCATION MAPS

DRAWN BY: []
 CHECKED BY: []
 APPROVED BY: []
 20/JULY/94
 9-23-94
 973234
 385013-A2
 DRAWING NUMBER



VICINITY MAP
 SCALE
 0 9 18 MILES



ATTACHMENT A-1
 SITE VICINITY MAP
 NAVAL WEAPONS STATION, YORKTOWN

PREPARED FOR
 NAVAL FACILITIES ENGINEERING COMMAND
 PT. HUENEME, CALIFORNIA



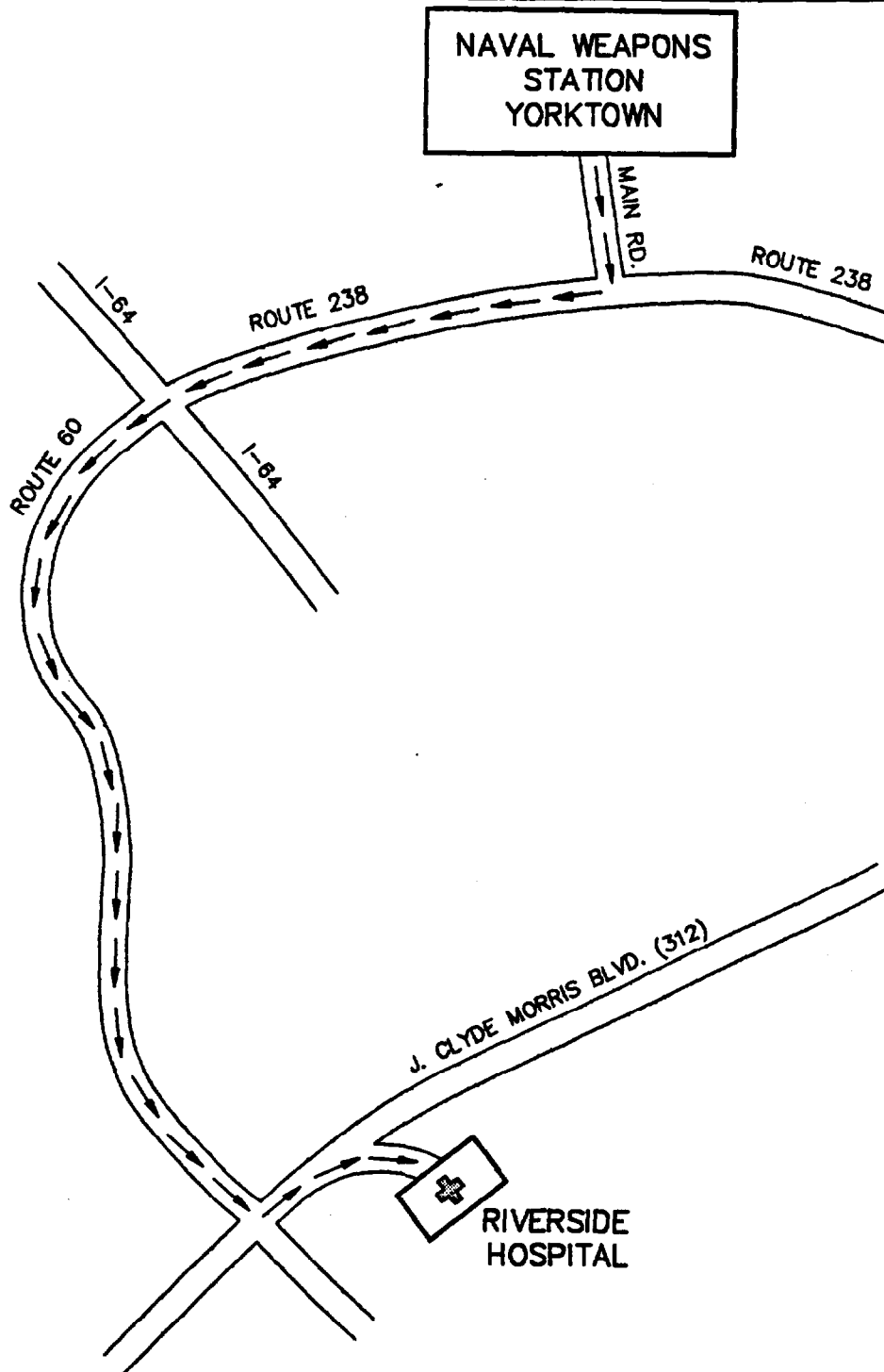
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"Do Not Scale This Drawing"

10-15-8
 2:30 PM

132288

DRAWN BY R. WEIBLE
 31 AU 894
 CHECKED BY 0000
 9-22-94
 APPROVED BY 0000
 9-23-94
 DRAWING NUMBER 385013-A4



"NOT TO SCALE"

DIRECTIONS TO RIVERSIDE HOSPITAL
 500 J. CLYDE MORRIS BLVD.
 (804) 594-2050

- EXIT SITE AND PROCEED SOUTH ON ROUTE 238
- ROUTE 238 TURNS INTO ROUTE 60 AFTER INTERSTATE 64
- CONTINUE ON ROUTE 60 TO J. CLYDE MORRIS BLVD. (312)
- TURN LEFT ON J. CLYDE MORRIS BLVD. (312)
- HOSPITAL IS ON THE RIGHT

ATTACHMENT A-2
 ROUTE TO HOSPITAL FROM
 NAVAL WEAPONS STATION YORKTOWN
 PREPARED FOR
 NAVAL FACILITIES ENGINEERING COMMAND
 PORT HUENEME, CALIFORNIA

IT INTERNATIONAL
 TECHNOLOGY
 CORPORATION

ATTACHMENT B
SSHP AMENDMENTS

ATTACHMENT C
ACTIVITY HAZARD ANALYSIS

***Activity Hazard Analysis
NWS Yorktown***

***Phase 1
Site Set-up***

ACTIVITY HAZARD ANALYSIS SITE SET-UP

Principal Steps	Potential Hazards	Recommended Controls
Field office establishment	Heavy lifting	Use proper lifting techniques. Lifts greater than 60 lbs. require assistance or mechanical equipment; size-up the lift. Recommend wearing a back support if possible.
	Slip, trip, and fall hazards	Good housekeeping, keep work area picked up and clean as feasible. Continually inspect the work area for slip, trip and fall hazards.
	Noise	Hearing protection is mandatory above 85 dBA.
	Falling objects	Hardhat, stay alert and clear of materials suspended overhead, steel-toed boots.
	Flying debris, dirt, dust etc.	Safety glasses/eye wash.
	Pinch points	Keep hands and feet clear of moving/suspended materials and equipment.
		Stay alert at all times!
		Beware of contact points.
	Fire	Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.
	High winds	Mobile/portable facilities shall be anchored to withstand high winds.
	Hot work	Refer to Section 4.4 of SSHP.
	Vehicle traffic	Pay attention at all times.
		Make sure that operators of vehicles know that you are near their equipment.
		A spotter will aid in the backing of all vehicles.

Principal Steps	Potential Hazards	Recommended Controls
Utilities	Proper installation	Above and underground utilities shall be located. A qualified person shall install required utilities in compliance with national, state, and local codes.
Work area identification Fence erection	Slip, trip, and fall hazards	Determine best access route before transporting equipment.
		Good housekeeping, keep work area picked up and clean as feasible. Continually inspect the work area for slip, trip, and fall hazards.
		Look before you step, ensure safe and secure footing.
	Heavy lifting	Use proper lifting techniques. Lifts greater than 60 lbs. require assistance or mechanical equipment; size-up the lift. Recommend wearing a back support if possible.
	Falling objects	Hardhat, stay alert and clear of materials overhead, steel-toed boots.
	Flying debris, dust, dirt, etc.	Safety glasses, eye wash
	Pinch points	Keep hands, fingers, and feet clear of moving/suspended materials and equipment.
		Beware of contact points/stay alert at all times.
	Cut hazards	Wear adequate hand protection.
	Biological hazards	Inspect work area carefully and avoid placing hands or feet into concealed areas.
		Be alert for bees, spiders, ticks, and snakes.
	Heat stress/cold stress	Refer to Sections 4.5 and 4.6 of SSHP.
	Fire	Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.
		Fuel will be transported and stored in approved containers.

Principal Steps	Potential Hazards	Recommended Controls
Work area identification Fence erection	Contact with moving equipment/vehicles	Work area will be barricaded/demarcated.
	Hazard communications	Label all containers as to contents (fuel cans, etc.)
		Obtain Material Safety Data Sheets for materials brought on site.
	Noise	Sound levels above 85 dBA mandates hearing protection.
	Cross contamination and contact with potentially contaminated materials	Technicians will wear proper protective clothing and equipment to safeguard against potential contamination.
		Only essential personnel will be in the work area.
		All personnel will follow good hygiene practices.
		Proper decontamination procedures will be followed.
		All liquid and materials used for decontamination will be contained and disposed of properly.
	Strains and sprains	Use the proper tool for the job being performed.
		Get assistance if needed.
		Avoid twisting/turning while pulling on tools, materials, etc.
	Unattended worker	"Buddy system" visual contact will be maintained between technicians during fence installation.
Temporary site access Road Construction Decontamination facilities	Heavy equipment operations	Before any machinery or mechanized equipment is placed into service, it shall be inspected and tested by a competent mechanic and certified to be in safe operating condition.
		Equipment shall be inspected before being placed into service and at the beginning of each shift.

Principal Steps	Potential Hazards	Recommended Controls
Temporary site access Road Construction Decontamination facilities	Heavy equipment operations	Preventive maintenance procedures recommended by the manufacturer shall be followed.
		All lockout - tagout procedure shall be used for equipment found to be faulty or undergoing maintenance.
		Machinery and mechanized equipment shall be operated only by designated personnel.
		Getting off or on any equipment while it is in motion is prohibited.
		Machinery or equipment requiring an operator shall not be permitted to run unattended.
		Machinery or equipment will not be operated in a manner that will endanger persons or property nor will the safe operating speeds or loads be exceeded.
		All machinery or equipment will be shut down and positive means taken to prevent its operation while repairs or manual lubrications are being done.
		All repairs on machinery or equipment will be made at a location which provides protection from traffic for repair persons.
		Bulldozer and scraper blades, end-loader buckets, and similar equipment will be either fully lowered or blocked when being repaired or when not in use.
		All self-propelled construction equipment shall be equipped with a back-up alarm.
	Fire	Each bulldozer, backhoe, or other similar equipment will be equipped with at least one dry chemical fire extinguisher having a minimum UL rating of 5 A:B:C

Principal Steps	Potential Hazards	Recommended Controls
Temporary site access Road Construction Decontamination facilities	Contact with underground utilities	All underground utilities shall be located and marked prior to excavation operations.
	Open excavations	IT Policy and Procedure HS307 "Excavation and Trenching" will be adhered to at all times.
	Heat/Cold Stress	Be aware of signs and symptoms. Observe work parties during likely heat/cold stress ambient conditions (<36°F and >77°F)
	Noise	Hearing protection is mandatory above 85 dBA.
	Cut hazards	Wear adequate hand protection.
	Falling objects	Hardhat, stay alert and clear of materials suspended overhead, steel-toed boots.
	Dump truck operations	Dump truck bodies shall be fully lowered or blocked when maintenance is being performed or when not in use.
		Dump trucks will have back-up alarms.
		A signal person will be used when the point of operation is not in full view of the vehicle, machine or equipment operator; vehicles are backed more than 100 ft; terrain is hazardous; or 2 or more vehicles are backing in the same area.
		Operators of dump trucks will leave the cab while being loaded.
		Dump trucks will not be loaded in a manner that obscures the operator's view ahead or to either side or that interferes with the safe operation of the vehicle.
		The load on every truck will be distributed, checked, tied down, or secured.
		Loads will be covered when there is a hazard of flying/falling dirt, rock, debris, or material.

Principal Steps	Potential Hazards	Recommended Controls
Temporary site access Road Construction Decontamination facilities	Dump truck operations	All dump trucks will be equipped with a holding device to prevent accidental lowering of the body.
		All hoist levers will be secured to prevent accidental starting or tripping of the mechanism.
		Trip handles for tailgates will be arranged to keep the operator in the clear.

***Activity Hazard Analysis
NWS Yorktown***

***Phase 2
Site Preparation***

ACTIVITY HAZARD ANALYSIS SITE PREPARATION

Principal Steps	Potential Hazards	Recommended Controls
Site preparation	Slip, trip, and fall hazards	Determine best access route before transporting equipment.
		Good housekeeping, keep work area picked up and clean as feasible. Continually inspect the work area for slip, trip, and fall hazards.
		Look before you step, ensure safe and secure footing.
	Heavy lifting	Use proper lifting techniques. Lifts greater than 60 lbs. require assistance or mechanical equipment; size-up the lift. Recommend wearing a back support if possible.
	Falling objects	Hardhat, stay alert and clear of materials overhead, steel-toed boots.
	Flying debris, dust, dirt, etc.	Safety glasses, eye wash
	Pinch points	Keep hands, fingers, and feet clear of moving/suspended materials and equipment.
		Beware of contact points/stay alert at all times.
	Cut hazards	Wear adequate hand protection.
	Biological hazards	Inspect work area carefully and avoid placing hands or feet into concealed areas.
		Be alert for bees, spiders, ticks, and snakes.
	Heat stress/cold stress	Refer to sections 4.5 and 4.6 of SSHP
	Fire	Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.
		Fuel will be transported and stored in approved containers.
	Contact with moving equipment/vehicles	Work area will be barricaded/demarcated.

Principal Steps	Potential Hazards	Recommended Controls
Site preparation	Hazard communications	Label all containers as to contents (fuel cans, etc.)
		Obtain Material Safety Data Sheets for materials brought on site.
	Noise	Sound levels above 85 dBA mandates hearing protection.
	Cross contamination and contact with potentially contaminated materials	Technicians will wear proper protective clothing and equipment to safeguard against potential contamination.
		Only essential personnel will be in the work area.
		All personnel will follow good hygiene practices.
		Proper decontamination procedures will be followed.
		All liquid and materials used for decontamination will be contained and disposed of properly.
	Strains and sprains	Use the proper tool for the job being performed.
		Get assistance if needed.
		Avoid twisting/turning while pulling on tools, materials, etc.
	Unattended worker	"Buddy system" visual contact will be maintained between technicians during fence installation.
	Dropping trees onto personnel	Only qualified personnel will drop trees.
		The work area shall be cleared to permit safe working conditions and an escape route planned before any cutting is started.
		Just before the tree or limb is ready to fall an audible warning shall be given to those in the area. All personnel in the vicinity shall be safely out of range.

Principal Steps	Potential Hazards	Recommended Controls
Site preparation	Dropping trees onto personnel	Employees shall work from the uphill side whenever possible.
		Prior to falling operations, the surrounding area, the shape of the tree, the lean of the tree, wind force and direction, and the location of other employees will be reviewed.
	Chainsaw operations	The chainsaw will not be fueled while running, when hot, or near open flame. the saw will not be started within 10 ft of a fuel container.
		The operator will hold the saw with both hands during all cutting operations.
		Operators must wear eye, ear, hand, foot, and leg protection.
		The chainsaw must never be used to cut above the operator's shoulder height.
		The idle speed will be adjusted so that the chain does not move when the engine is idling.
		The operator will shut off the saw when carrying it over slippery surfaces, through heavy brush, and when adjacent to personnel.
		All chainsaws on site shall have automatic chain brake or kick back device.
	Sharp objects	Individuals must be alert to sharp objects that may be lying under brush. Metal inserts may be used inside boots to make them puncture resistant.
	Poisonous plants, snakes, and insects	Individuals must be aware of the potential for these hazards to be present. Precautionary measures to be taken will be addresses in daily tailgate safety meetings.
	Use of machetes	Keep other personnel clear of swing area. Use extreme caution when using.
	Knife cuts	Cutting strokes will always be away from the body.

Principal Steps	Potential Hazards	Recommended Controls
Site preparation	Knife cuts	Leather gloves will be worn when cutting.
		Place knife in sheath on holder when not in use.
		Unused knives will never be left with cutting edges exposed,
		Never use a knife that is defective or has a broken blade or handle.
		Never use a knife as a prybar or screwdriver.
		Don't use a dull blade; replace or have sharpened prior to use.

***Activity Hazard Analysis
NWS-Yorktown***

***Phase 3
Waste Removal***

ACTIVITY HAZARD ANALYSIS WASTE REMOVAL

Activity	Potential Hazards	Recommended Controls
Waste Removal Operations	Underground utilities	All underground utilities will be located prior to excavating.
	Noise	Noise levels above 85 dBA mandates hearing protection.
	Heavy equipment operations	Before any machinery or mechanized equipment is placed into service, it shall be inspected and tested by a competent mechanic and certified to be in safe operating condition.
		Equipment shall be inspected before being placed into service and at the beginning of each shift.
		Preventive maintenance procedures recommended by the manufacturer shall be followed.
		A lockout - tagout procedure shall be used for equipment found to be faulty or undergoing maintenance.
		Machinery and mechanized equipment shall be operated only by designated personnel.
		Getting off or on any equipment while it is in motion is prohibited.
		Machinery or equipment requiring an operator shall not be permitted to run unattended.
		Machinery or equipment will not be operated in a manner that will endanger persons or property nor will the safe operating speeds or loads be exceeded.
		All machinery or equipment will be shut down and positive means taken to prevent its operation while repairs or manual lubrications are being done.
		All repairs on machinery or equipment will be made at a location which provides protection from traffic for repair persons.

Activity	Potential Hazards	Recommended Controls
Waste removal operations	Heavy equipment operations	Bulldozer and scraper blades, end-loader buckets, and similar equipment will be either fully lowered or blocked when being repaired or when not in use.
		All self-propelled construction equipment shall be equipped with a back-up alarm.
	Contact with potentially contaminated materials	Real-time air monitoring will take place. Proper personal protective clothing and equipment will be utilized.
		Good housekeeping will be stressed to safe guard against cross contamination of surrounding areas and eliminate safety hazards.
		All site personnel will practice good personal hygiene.
		The work area will be demarcated. All unnecessary personnel will be kept out of the work area and in an upwind location.
		Refer to Section 3.2 of SSHP for chemical hazard discussion.
	Slip, trip and fall hazards	Good housekeeping, keep work area picked up and as clean as feasible. Continually inspect the work area for slip, trip and fall hazards.
	Pinch points	Keep feet and hands clear of moving/suspended materials and equipment.
		Beware of contact points.
		Stay alert at all times!
	Strains and sprains	Use proper lifting techniques, lifts greater than 60 lbs. requires assistance or mechanical equipment; size up the lift. Recommend wearing a back support if possible.
	Ropes, slings, chains and hooks	The use of ropes, slings and chains shall be in accordance with the safe recommendations of their manufacturer.
		Rigging equipment shall not be loaded in excess of its recommended safe working load.

Activity	Potential Hazards	Recommended Controls
Waste removal operations	Ropes, slings, chains and hooks	The use of open hooks is prohibited in rigging to lift any load.
		Hooks, shackles, rings, pad eyes and other fittings that show excessive wear or that have been bent, twisted or otherwise damaged shall be tagged and removed from service.
		Rigging equipment for material handling shall be inspected prior to use on each shift and as necessary during its use to insure that it is safe. Defective rigging equipment shall be tagged and removed from service.
		Rigging equipment, when not in use, shall be removed from the immediate work area and properly stored so as not to present a hazard.
		Taglines shall be used to control the loads being handled by hoisting equipment.
	Hoisting equipment	All hoisting equipment shall be capable of passing a performance (operating) test prior to being placed into service.
		At no time shall the hoisting equipment be loaded in excess of the manufacturers rating.
		While hoisting equipment is in operation, the operator shall not perform any other work and he/she shall not leave his/her position at the controls until the load has been safely landed or returned to the ground.
	UXO	Refer to Section 4.12 of the SSHP.
	Truck operations	Dump truck bodies shall be fully lowered or blocked when maintenance is being performed or when not in use.
		Trucks will have back-up alarms.
		A signal person will be used when the point of operation is not in full view of the vehicle, machine or equipment operator; vehicles are backed more than 100 ft; terrain is hazardous; or 2 or more vehicles are backing in the same area.

Activity	Potential Hazards	Recommended Controls
Waste removal operations	Truck operations	Operators of trucks will leave the cab while being loaded.
		Trucks will not be loaded in a manner that obscures the operator's view ahead or to either side or that interferes with the safe operation of the vehicle.
		The load on every truck will be distributed, checked, tied down, or secured.
		Loads will be covered when there is a hazard of flying/falling dirt, rock, debris, or material.
		All dump trucks will be equipped with a holding device to prevent accidental lowering of the body.
		All hoist levers will be secured to prevent accidental starting or tripping of the mechanism.
		Trip handles for tailgates will be arranged to keep the operator in the clear.
		A standard signal system shall be used on all hoisting equipment.
	Drums	Refer to Section 4.11 of the SSHP.
	Knife cuts	Cutting strokes will always be away from the body.
		Leather gloves will be worn when cutting.
		Place knife in sheath on holder when not in use.
		Unused knives will never be left with cutting edges exposed.
		Never use a knife that is defective or has a broken blade or handle.
		Never use a knife as a prybar or screwdriver.
		Don't use a dull blade; replace or have sharpened prior to use.
	Flying debris	Wear safety glasses at all times.

Activity	Potential Hazards	Recommended Controls
Waste removal operations	Fire	A dry chemical fire extinguisher with a minimum UL rating of 5 A:B:C will be readily available.
		No smoking or open flames within 50 ft. of the work area. (Work area will be posted)
		Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.
		All hoses, couplings, fixtures, etc. shall be properly bonded and grounded.
		IT Corporation's HS314 "Hot Work in Hazardous Locations" Policy and Procedure shall be adhered to at all times.
	Fueling	Only UL/FM approved safety cans shall be used to store fuel.
		Do not refuel equipment while it is operating.
		Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.
	Faulty or damaged equipment	Before any machinery or mechanized equipment is placed into service, it shall be inspected and tested by a competent mechanic and certified to be in safe operating condition.
		Equipment shall be inspected before being placed into service and at the beginning of each shift.
		Preventive maintenance procedures recommended by the manufacturer shall be followed.

Activity	Potential Hazards	Recommended Controls
Waste removal operations	Faulty or damaged equipment	A lockout-tagout procedure shall be used for equipment found to be faulty or undergoing maintenance.
	Electrical hand tools/electrocution	Ground fault circuit interrupters inspect extension cords, hand tool inspection, lockout-tagout procedure.
	Contact with glues, solvents, etc.	Be familiar with the materials you are working with (MSDSs)
	Heavy lifting	Safe lifting procedures. Loads over 60 lbs require assistance or mechanical lifting device.
	Open excavations	IT Policy and Procedure HS307 - "Excavation and Trenching" will be adhered to at all times.
	Cave-ins	Excavation will be inspected daily by a competent person.
		Excavations greater than five feet deep shall be sloped or shored.
		Undercutting the side of an excavation is not permitted.
	Water	Ditches, dikes, or other means shall be used to prevent surface water from entering excavation.
		Employees will not be permitted to work in excavations with accumulated water.
	Falling materials	Protection will be provided for loose rock or soil falling into the excavation.
		Excavated material will be placed at least two feet from the edge of the excavation.
		Personnel will stand away from vehicles being loaded or unloaded.
	Batteries	Heavy butyl gloves should be worn while handling batteries. See Section 5.0 of SSHP for PPE requirements.
		Manually move batteries as little as possible. Use equipment if possible.
	Fire extinguishers	Discharge extinguishers away from your body and site personnel.
		Use face shield and PPE described in Section 5.0 of the SSHP.

***Activity Hazard Analysis
NWS Yorktown***

***Phase 4
Site Restoration***

ACTIVITY HAZARD ANALYSIS SITE RESTORATION

Activity	Potential Hazards	Recommended Controls
Site restoration	Heavy equipment operations	Before any machinery or mechanized equipment is placed into service, it shall be inspected and tested by a competent mechanic and certified to be in safe operating condition.
		Equipment shall be inspected before being placed into service and at the beginning of each shift.
		Preventive maintenance procedures recommended by the manufacturer shall be followed.
		A lockout - tagout procedure shall be used for equipment found to be faulty or undergoing maintenance.
		Machinery and mechanized equipment shall be operated only by designated personnel.
		Getting off or on any equipment while it is in motion is prohibited.
		Machinery or equipment requiring an operator shall not be permitted to run unattended.
		Machinery or equipment will not be operated in a manner that will endanger persons or property nor will the safe operating speeds or loads be exceeded.
		All machinery or equipment will be shut down and positive means taken to prevent its operation while repairs or manual lubrications are being done.
		All repairs on machinery or equipment will be made at a location which provides protection from traffic for repair persons.
		Bulldozer and scraper blades, end-loader buckets, and similar equipment will be either fully lowered or blocked when being repaired or when not in use.

Activity	Potential Hazards	Recommended Controls
Site restoration	Heavy equipment operation	All self-propelled construction equipment shall be equipped with a back-up alarm.
	Fire	Each bulldozer, backhoe, or other similar equipment will be equipped with at least one dry chemical fire extinguisher having a minimum UL rating of 5 A:B:C.
	Open excavations	IT Policy and Procedure HS307 "Excavation and Trenching" will be adhered to at all times.
		Excavations will be backfilled as soon as possible.
	Dump truck operations	Dump truck bodies shall be fully lowered or blocked when maintenance is being performed or when not in use.
		Dump trucks will have back-up alarms.
		A signal person will be used when the point of operation is not in full view of the vehicle, machine or equipment operator; vehicles are backed more than 100 ft; terrain is hazardous; or 2 or more vehicles are backing in the same area.
		Operators of dump trucks will leave the cab while being loaded
		Dump trucks will not be loaded in a manner that obscures the operator's view ahead or to either side or that interferes with the safe operation of the vehicle.
		The load on every truck will be distributed, checked, tied down, or secured.
		Loads will be covered when there is a hazard of flying/falling dirt, rock, debris, or material.
		All dump trucks will be equipped with a holding device to prevent accidental lowering of the body.
		All hoist levers will be secured to prevent accidental starting or tripping of the mechanism.

Activity	Potential Hazards	Recommended Controls
Site restoration	Dump truck operations	Trip handles for tailgates will be arranged to keep the operator in the clear.
	Contact with moving equipment	Ground personnel shall wear reflective vests.
	Noise	Noise levels above 85 dBA mandates the use of hearing protection.
	Heavy lifting	Use proper lifting techniques. Lifts greater than 60 lbs. require assistance or mechanical equipment; size-up the lift. Recommend wearing a back support if possible.
	Cut hazards	Wear adequate hand protection.
	Lighting	Adequate lighting will be provided to ensure a safe working environment.
	Strains/sprains	When pulling or lifting, do not turn or twist your back.
		Use the proper tool for the task being performed.
	Contact with potentially contaminated materials	Appropriate PPE protection will be required.
		Real time air monitoring will take place during decontamination activities.
		Keep airborne particulates to a minimum.
		Practice good housekeeping, avoid spreading potentially contaminated materials.
	Fueling	Only UL/FM approved safety cans shall be used to store fuel.
		Do not refuel equipment while it is operating.
		Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.

Activity	Potential Hazards	Recommended Controls
Site restoration	Faulty or damaged equipment	Before any machinery or mechanized equipment is placed into service, it shall be inspected and tested by a competent mechanic and certified to be in safe operating condition.
		Equipment shall be inspected before being placed into service and at the beginning of each shift.
		Preventive maintenance procedures recommended by the manufacturer shall be followed.
		A lockout - tagout procedure shall be used for equipment found to be faulty or undergoing maintenance.
	High pressures	IT Policy and Procedure HS303 "Hydroblasting" shall be adhered to at all times.
	Unqualified operators	Machinery and mechanized equipment shall be operated only by designated personnel.
	Out of control equipment	Machinery or equipment requiring an operator shall not be permitted to run unattended.
		Machinery or equipment will not be operated in a manner that will endanger persons or property nor will the safe operating speeds or loads be exceeded.
	Activation during repairs	All machinery or equipment will be shut down and positive means taken to prevent its operation while repairs or manual lubrications are being done.
	Falling objects	Hardhats, remove unsecured tools and materials before operating equipment.
		Stay alert and clear of materials suspended overhead.
	Flying debris	Face shield will be used.

Activity	Potential Hazards	Recommended Controls
Site restoration	Hot work (hot water/steam cleaning)	IT Policy and Procedure HS314 "Hot Work in Hazardous Locations" will be adhered to at all times during any operations involving hot work.
	Pressurized systems	All discharge hoses and connections shall be routinely inspected.
	Truck and Equipment Traffic	Site personnel will wear orange safety vests to identify themselves to traffic.
		Load out area will be properly demarcated.
	Slip, trip and fall hazards	Good housekeeping, keep work area picked up and as clean as feasible. Continually inspect the work area for slip, trip, and fall hazards. Look where you step, ensure safe footing when climbing on/off equipment etc.
	Pinch points	Keep feet and hands clear of moving/suspended materials and equipment.
		Beware of contact points. Stay alert at all times!
	Strains/sprains	Use proper lifting techniques. Lifts greater than 60 lbs require assistance or mechanical equipment. Size-up the lift. Recommend wearing a back support if possible. When pulling on materials, pull in a straight line. Do not twist and pull simultaneously.
	Ropes, slings, chains, and hooks	The use of ropes, slings, and chains shall be in accordance with the safe recommendations of their manufacturer.
		Rigging equipment shall not be loaded in excess of its recommended safe working load.
		The use of open hooks is prohibited in rigging to lift any load where there is danger of relieving the tension on the hook due to the load or hook catching or fouling.
		Hooks, shackles, rings, pad eyes, and other fittings that show excessive wear or that have been bent, twisted, or otherwise damaged shall be removed from service.

Activity	Potential Hazards	Recommended Controls
Site restoration	Ropes, slings, chains, and hooks	Rigging equipment for material handling shall be inspected prior to use on each shift and as necessary during its use to insure that it is safe. Defective rigging equipment shall be removed from service.
		Rigging equipment, when not in use, shall be removed from the immediate work area and properly stored so as not to present a hazard.
		Taglines shall be used to control the loads being handled by hoisting equipment.
	Hoisting Equipment	All hoisting equipment shall be capable of passing a performance (operating) test prior to being placed into service.
		At no time shall the hoisting equipment be loaded in excess of the manufacturers rating except during performance tests.
		While hoisting equipment is in operation, the operator shall not perform any other work and he/she shall not leave his/her position at the controls until the load has been safely landed or returned to the ground.
		A standard signal system shall be used on all hoisting equipment.
	Heat/cold stress	Be aware of warning signs of these conditions. Refer to Sections 4.4 and 4.5 of SSHP.
	Bees, spiders, and snakes	Inspect work area carefully and avoid placing hands and feet into concealed areas.
	Water safety	Personal flotation devices (PFD) will be provided and worn by technicians working on or near the water where a drowning potential exists.
		PFDs will be inspected for defects before and after each use. Defective PFDs will be taken out of service.
		PFDs will be equipped with retroreflective tape as specified in 46 CFR 25.25-15.

Activity	Potential Hazards	Recommended Controls
Site restoration	Water safety	A ring buoy will be kept near the water's edge with 90 ft. of $\frac{3}{8}$ -inch solid braid polypropylene line attached.

***Activity Hazard Analysis
NWS Yorktown***

***Phase 5
Transportation and Disposal of Waste***

ACTIVITY HAZARD ANALYSIS TRANSPORTATION AND DISPOSAL OF WASTE

Principal Steps	Potential Hazards	Recommended Controls
Storage, transportation and disposal of waste	Contact with potentially contaminated materials	Real-time air monitoring will take place. Appropriate PPE will be utilized.
		Good housekeeping will be stressed to safeguard against cross contamination of near by areas and eliminate safety hazards.
		All site personnel will practice good personal hygiene by utilizing the decon facility on site.
		The work area will be demarcated. All unnecessary personnel will be kept out of the work area and in an upwind location.
		Refer to Section 3.2 of the SSHP for a discussion of chemical hazards.
	Noise	Noise levels above 85 dBA mandates hearing protection.
	Slip, trip and fall hazards	Good housekeeping, keep work area picked up and as clean as feasible. Continually inspect the work area for slip, trip and fall hazards.
	Pinch points	Keep feet and hands clear of moving/suspended materials and equipment.
		Beware of contact points.
		Stay alert at all times!
	Strains and sprains/ heavy lifting	Use proper lifting techniques. Lifts greater than 60 lbs requires assistance or mechanical equipment; Size up the lift. Recommend wearing a back support if possible.
	Cut hazards	Wear adequate hand protection.
	Falling objects	Remove unsecured tools and materials from elevated heights.
		Stay clear of materials suspended overhead.

Principal Steps	Potential Hazards	Recommended Controls
Storage, transportation and disposal of waste	Biological hazards - bees, spiders, and snakes	Inspect the work area carefully and avoid placing hands and feet into concealed areas.
	Working at elevated heights/falls	Personnel working at heights of 6 feet or more must be secured with fall protection.
	Fire	Real-time air monitoring will take place to determine oxygen content and lower explosive limit when necessary.
		No smoking or open flames outside of designated areas. (Work area will be posted.)
		Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.
		When fueling, all hoses, couplings, fixtures etc. shall be properly bonded and grounded.
		IT Corporation's HS314 "Hot Work in Hazardous Locations" Policy and Procedure shall be adhered to at all times.
	Electrical safety	Electrical equipment will be locked out and tagged while under repair.
	Staging equipment	Signal person will assist in positioning equipment.
	Uneven terrain and poor ground support	Inspections or determinations of road conditions and structures shall be made in advance to assure that clearances and load capacities are safe for the passage or placing of any machinery or equipment.
	Hazard communication	All containers shall be labeled as to contents and disposed of properly.
	Spills	Absorbent/neutralization material and 55 gallon drums will be kept available where leaks, spills, or ruptures may occur.
		Spilled materials shall be cleaned up immediately.

Principal Steps	Potential Hazards	Recommended Controls
Storage, transportation and disposal of waste	Spills	Refer to Section 11.6 of SSHP for further discussion on spills.
	Ladders	Ladder safety will be discussed at the Daily Tailgate Safety Meeting.
		Ladders will be inspected prior to each use.
		Faulty ladders will be tagged and taken out of service.
		Ladders will be secured by top, bottom, and intermediate fastenings as required.
		Personnel working at heights of 6 feet or more must be secured with fall protection (safety belt/lanyard).
	Unattended worker	"Buddy System" - visual contact will be maintained with personnel engaged in the transfer/removal of contaminated materials.
	Lighting	Adequate lighting will be provided to ensure a safe working environment.
	Confined spaces	Refer to Section 4.8 of the SSHP for confined space procedure.
	Moving equipment	Signal person will assist in moving equipment.
	Faulty equipment	Equipment will be inspected prior to being placed into service and at the beginning of each shift.
	Pressurized systems	All discharge hoses and connections shall be routinely inspected.
	Refueling	Proper bonding and grounding. Only UL/FM approved safety cans will be used.
		Do not refuel equipment while it is operating.
		Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.

Principal Steps	Potential Hazards	Recommended Controls
Storage, transportation and disposal of waste	Transportation vehicle operation	Before any machinery or mechanized equipment is placed into service, it shall be inspected and tested by a competent mechanic and certified to be in safe operating condition.
		Vehicles shall be inspected before being placed into service and at the beginning of each shift.
		Preventive maintenance procedures recommended by the manufacturer shall be followed.
		All lockout - tagout procedure shall be used for vehicles found to be faulty or undergoing maintenance.
		All vehicles will be shut down and positive means taken to prevent their operation while repairs are being done.
		Vehicles shall be operated only by designated personnel.
		Getting off or on any vehicle while it is in motion is prohibited.
		Machinery or equipment requiring an operator shall not be permitted to run unattended.
		Stop logs or barricades will be used when vehicles or mobile equipment are being used adjacent to an excavation
		All repairs on machinery or equipment will be made at a location which provides protection from traffic for repair persons.
		Bulldozer and scraper blades, end-loader buckets, and similar equipment will be either fully lowered or blocked when being repaired or when not in use.
		All self-propelled construction equipment shall be equipped with a back-up alarm.

Principal Steps	Potential Hazards	Recommended Controls
Excavation of potentially contaminated soil	Contact with overhead utilities	All overhead utilities shall be located prior to transportation operations.
	Heat/Cold Stress	Be aware of signs and symptoms. Observe work parties during likely heat/cold stress ambient conditions. Refer to Sections 4.4 and 4.5 of SSHP.

ATTACHMENT D

CONFINED SPACE ENTRY PROCEDURE



Approved by *[Signature]*

PROCEDURE

(subject) **CONFINED SPACES**

1.0 PURPOSE AND SUMMARY

This procedure describes the procedures for identifying and working within confined spaces throughout IT and for complying with OSHA regulations 29 CFR 1910.146. Additional requirements for special confined space applications can be found in the following procedures:

- HS301 Confined Spaces, Marine
- HS302 Confined Spaces, Lead Product

Key provisions of this procedure include the following:

- Identification and posting of confined spaces at IT facilities.
- HASP requirements.
- Entry permit requirements for confined space entries.
- Testing and monitoring.
- Personal protective equipment, including lifelines and harnesses.
- Lighting.
- MSDS requirements.
- Rescue and emergency services and procedures.
- Communication between entrants and attendants.
- Duties of personnel.
- Training requirements.
- Entrant location tracking systems.
- Recordkeeping and retention.
- Annual program review.

2.0 TABLE OF CONTENTS

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3.0 RESPONSIBILITY MATRIX

- 3.1 **Procedure Responsibility.** The Corporate Director, Health and Safety is responsible for the issuance, revision and maintenance of this procedure.
- 3.2 **Action/Approval Responsibilities.** The Responsibility Matrix is Attachment 1.

4.0 DEFINITIONS

- 4.1 **Acceptable entry conditions** means the conditions that must exist in a permit space to allow entry so that employees involved with a permit-required confined space entry can safely enter into and work within the space.
- 4.2 **Attendant** means an individual stationed outside one or more permit spaces who monitors the authorized entrants and who performs all attendant's duties assigned in the IT permit space program.
- 4.3 **Authorized entrant** means an employee who is authorized by IT to enter a permit space.
- 4.4 **Blanking or blinding** means the absolute closure of a pipe, line, or duct by the fastening of a solid plate (such as a spectacle blind or a skillet blind) that completely covers the bore and that is capable of withstanding the maximum pressure of the pipe, line, or duct with no leakage beyond the plate.
- 4.5 **Confined space** means a space that:
- 4.5.1 Is large enough and so configured that an employee can bodily enter and perform assigned work;
 - 4.5.2 Has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, pits, and excavations are spaces that may have limited means of entry); and
 - 4.5.3 Is not designed for continuous employee occupancy.

See also definition 4.21.

- 4.6 **Double block and bleed** means the closure of a line, duct, or pipe by closing and locking or tagging two in-line valves and by opening and locking or tagging a drain or vent valve in the line between the two closed valves.
- 4.7 **Emergency** means any occurrence (including any failure of hazard control or monitoring equipment) or event, internal or external, to the permit space that could endanger entrants.
- 4.8 **Engulfment** means the surrounding and effective capture of a person by a liquid or finely divided (flowable) solid substance that can be aspirated to cause death by filling or plugging the respiratory system or that can exert enough force on the body to cause death by strangulation, constriction, or crushing.



- 4.9 Entry means the action by which a person passes through an opening into a permit-required confined space. Entry includes ensuing work activities in that space and is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space.
- 4.10 Entry Permit (Attachment 3) means the written or printed document that is provided by IT to allow and control entry into a permit space and that contains the information specified in Paragraph 4.1 of this section.
- 4.11 Entry Supervisor means the person (such as the supervisor, foreman, or crew chief) responsible for determining if acceptable entry conditions are present at a permit space where entry is planned, for authorizing entry and overseeing entry operations, and for terminating entry as required by this section.
- 4.12 Hazardous atmosphere means an atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue (that is, escape unaided from a permit space), injury, or acute illness from one or more of the following causes:
- 4.12.1 Flammable gas, vapor, or mist in excess of 10 percent of its lower explosive limit (LEL);
 - 4.12.2 Airborne combustible dust at a concentration that meets or exceeds its LEL;

NOTE: This concentration may be approximated as a condition in which the dust obscures vision at a distance of 5 feet (1.52 m) or less.
 - 4.12.3 Atmospheric oxygen concentration below 20.0 percent or above 23.5 percent.
 - 4.12.4 Atmospheric concentration of any substance for which a dose or a published exposure guideline is available (Permissible Exposure Limit, PEL, from OSHA, Threshold Limit Value, TLV, from ACGIH, and Recommended Exposure Limits, REL, from NIOSH), and which could result in employee exposure in excess of its dose or permissible exposure limit.
 - 4.12.5 Any other atmospheric condition that is immediately dangerous to life or health.
- 4.13 Hot work permit means IT written authorization to perform hot operations (for example, riveting, welding, cutting, burning, and heating) capable of providing a source of ignition. This is a separate document from the entry permit.
- 4.14 Immediately Dangerous to Life or Health (IDLH) means any condition that poses an immediate or delayed threat to life or that would cause irreversible adverse health effects or that would interfere with an individual's ability to escape unaided from a permit space.
- 4.15 Inerting means the displacement of the atmosphere in a permit space by a noncombustible gas (such as nitrogen) to such an extent that the resulting atmosphere is noncombustible.



- 4.16 **Isolation** means the process by which a permit space is removed from service and completely protected against the release of energy and material into the space by such means as: blanking or blinding; misaligning or removing sections of lines, pipes, or ducts; a double block and bleed system; lockout or tagout of all sources of energy, including hydraulic or electric; blocking or disconnecting all mechanical linkages; or physically restraining moving parts.
- 4.17 **Line breaking** means the intentional opening of a pipe, line, or duct that is or has been carrying flammable, corrosive, or toxic material, an inert gas, or any fluid at a volume, pressure, or temperature capable of causing injury.
- 4.18 **Non-permit confined space** means a confined space that does not contain or, with respect to atmospheric hazards, have the potential to contain any hazard capable of causing death or serious physical harm.
- 4.19 **Oxygen deficient atmosphere** means an atmosphere containing less than 20.0 percent oxygen by volume.
- 4.20 **Oxygen-enriched atmosphere** means an atmosphere containing more than 23.5 percent oxygen by volume.
- 4.21 **Permit-Required Confined Space (PRCS)** means a confined space that has one or more of the following characteristics:
- 4.21.1 Contains or has a potential to contain a hazardous atmosphere;
 - 4.21.2 Contains a material that has the potential for engulfing an entrant;
 - 4.21.3 Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section; or
 - 4.21.4 Contains any other recognized serious safety or health hazard.
- 4.22 **Prohibited condition** means any condition in a permit space that is not allowed by the permit during the period when entry is authorized.
- 4.23 **Rescue service** means the personnel designated to rescue employees from permit spaces.
- 4.24 **Retrieval system** means the equipment (including a retrieval line, chest or full-body harness, wristlets, if appropriate, and a lifting device or anchor) used for non-entry rescue of persons from permit spaces.
- 4.25 **Testing** means the process by which the hazards that may confront entrants of a permit space are identified and evaluated. Testing includes specifying the tests that are to be performed in the permit space.



5.0 TEXT

5.1 Scope and Applicability

This procedure contains the requirements for performing work in confined spaces throughout IT Corporation, specifically including construction.

5.2 Evaluate the Workplace

All facilities or project locations owned or operated by IT Corporation (including joint ventures) shall be evaluated to identify the presence of permit-required confined spaces. All such spaces shall be posted with a sign bearing the following or similar warning: "DANGER-PERMIT-REQUIRED CONFINED SPACE. DO NOT ENTER".

5.3 Non-Permit Confined Spaces

All confined spaces shall be initially considered permit-required confined spaces. Such spaces can be reclassified as non-permit confined spaces only under the following conditions:

- 5.3.1 Site-specific approval of an IT HS professional;
- 5.3.2 All contaminants, contaminated soils, and vessels containing contaminants have been removed;
- 5.3.3 All actual or potential atmospheric hazards have been eliminated, with testing verification;
- 5.3.4 Ventilation is not required to maintain control of atmospheric hazards;
- 5.3.5 All recognized hazards, including engulfment, within the confined space have been eliminated;
- 5.3.6 The confined space shall be re-evaluated (and reclassified to permit-required, if needed) whenever the use or configuration of the space changes in any way that might increase the hazards to the entrants. All entrants shall exit the space immediately when hazards are noted;
- 5.3.7 The entry supervisor shall make the certification that all hazards have been removed on the Entry Permit (Attachment 3); and
- 5.3.8 The Entry Permit (Attachment 3) shall be posted at the entrance to the confined space.

5.4 Permit-Required Confined Spaces

All confined space entries shall be considered permit-required until/unless the space meets the requirements in section 5.3.



5.4.1

Procedures and Practices for Permit Space Entry

Prior to beginning any confined space entry operation, a Health and Safety Plan (HASP) shall be developed and approved per IT Procedure HS052 requirements. The HASP must specifically address the following areas:

- Specify acceptable entry conditions. IT requires that combustible vapors shall not exceed 10.0 percent of the LEL and oxygen levels be between 20-23.5 percent by volume. Appropriate toxic gas/vapor action levels shall also be established (Level A or IDLH conditions require Corporate HS approval).
- Confined space isolation procedures.
- Lockout, tagout, tryout and return to service procedures for potential sources of hazardous energy at the specific project location (see also IT procedure HS315 Control of Hazardous Energy Sources).
- Procedures and equipment for purging, inerting, flushing or ventilating the space for the control of atmospheric hazards. Continuous mechanical ventilation shall be used whenever entrants are in the PRCS.
- Procedures for inspecting, monitoring and testing the confined space to verify that acceptable conditions exist prior to and throughout the entry operation. This includes:
 - Specific atmospheric tests to be performed and frequency of tests (NOTE: Confined spaces shall be tested as often as necessary to verify entrant safety, whenever operations or conditions change [e.g., temperature change or product agitation, etc.], and no less often than hourly);
 - Specific testing equipment required;
 - For confined spaces that cannot be completely isolated (e.g., sewers, etc.), continuous testing with real-time direct reading instruments shall be required; and
 - Priority for atmospheric hazard testing shall be oxygen, combustible gases, then toxic gases/vapors.
- Personal Protective Equipment:
 - Protective suits, boots, and gloves - including specification of the material of construction.
 - Face, head, and foot protection.



- Specify chest or parachute harness with approved lifelines at least one-half inch in diameter and 2,000 pounds test and meeting ANSI A10.14 requirements. (NOTE: Wristlets may be used only when an IT HS professional finds that a harness presents a greater hazard to the employee and wristlets are the safest, most effective alternative.) All lifelines shall be secured to a mechanical device or fixed point outside the confined space. Mechanical extraction devices shall be used for all vertical entry permit spaces greater than five (5) feet deep.
- Respiratory protection, per IT procedure HS601.
- Material Safety Datasheets (MSDS) to be provided to the medical facility when treating injured/exposed entrants.
- Lighting equipment required to safely illuminate the work and provide emergency egress.

NOTE: Lighting and electrical equipment shall be of the appropriate National Electrical Code (NEC) rating. Rating should be Class I, Division I unless the space specifically meets other rating class requirements.

- Protective barriers to be used to protect entrants from external pedestrian, vehicle or equipment hazards.
- Ingress and egress equipment such as ladders.
- Rescue and emergency services, procedures, equipment, and Exposure Control Plan (see IT Procedure HS512). The HASP must specify whether IT or another source will provide these services and equipment, and how to summon them. IT shall provide rescue services unless the client has a qualified rescue team in-plant which is available to IT and has been informed of the hazards of the confined space to be entered.
- Communications equipment to provide continuous communication between entrants and attendants. This can be done using the standard system of lifeline "tugs" below, so long as the attendants continuously hold the lifelines in their hands.

Lifeline "Tug" Signals

- 1 Tug = Are you OK?
- 2 Tugs = Yes, I am OK.
- 3 Tugs = Exit the confined space immediately.



Any other signal, or an unclear signal, shall require immediate exit of the PRCS.

Other standard hand signals are provided in Attachment 2.

An alternative system would be to provide all entrants and attendants with an air powered horn. Substituting horn blasts for tugs, equivalent signals to the lifeline "tug" signals, would be standard. Any other or uncertain signals require immediate exit.

If this is not practical or possible, powered communication equipment with the appropriate NEC rating shall be provided.

- Prescribe the number of attendants and other outside support personnel. Each confined space being entered shall have a minimum of one (1) dedicated attendant and one other support person (who may have other duties) within sight or call.
- Designate the duties of entrants, attendants, and entry supervisors as described below.

Duties of authorized entrants

- Know the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure.
- Communicate with the attendant as necessary to enable the attendant to monitor entrant status and to enable the attendant to alert entrants of the need to evacuate the space.
- Alert the attendant whenever:
 - (1) The entrant recognizes any warning sign or symptom of exposure to a dangerous situation, or
 - (2) The entrant detects a prohibited condition; and
- Exit from the permit space as quickly as possible whenever:
 - (1) An order to evacuate is given by the attendant or the entry supervisor,
 - (2) The entrant recognizes any warning sign or symptom of exposure to a dangerous situation,
 - (3) The entrant detects a prohibited condition, or
 - (4) An evacuation alarm is activated.

Duties of attendants

- Know the hazards that may be faced during entry, including

information on the mode, signs or symptoms, and consequences of the exposure.

- Is aware of possible behavioral effects of hazard exposure in authorized entrants.
- Continuously maintains an accurate count of authorized entrants in the permit space so that the means used to identify authorized entrants accurately identifies who is in the permit space.
- Remains outside the permit space during entry operations until relieved by another attendant.
- Communicates with authorized entrants as necessary to monitor entrant status and to alert entrants of the need to evacuate the space.
- Monitors activities inside and outside the space to determine if it is safe for entrants to remain in the space and orders the authorized entrants to evacuate the permit space immediately under any of the following conditions:
 - (1) If the attendant detects a prohibited condition;
 - (2) If the attendant detects the behavioral effects of hazard exposure in an authorized entrant;
 - (3) If the attendant detects a situation outside the space that could endanger the authorized entrants; or
 - (4) If the attendant cannot effectively and safely perform all prescribed duties.
- Summon rescue and other emergency services as soon as the attendant determines that authorized entrants may need assistance to escape from permit space hazards.
- Takes the following actions when unauthorized persons approach or enter a permit space while entry is underway:
 - (1) Warn the unauthorized persons that they must stay away from the permit space;
 - (2) Advise the unauthorized persons that they must exit immediately if they have entered the permit space; and
 - (3) Inform the authorized entrants and the entry supervisor if unauthorized persons have entered the permit space.
- Performs non-entry rescues.



- Performs no duties that might interfere with the attendant's primary duty to monitor and protect the authorized entrants.

Duties of Entry Supervisors

- Knows the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure.
- Verifies, by checking that the appropriate entries have been made on the permit, that all tests specified by the permit have been conducted and that all procedures and equipment specified by the permit are in place before endorsing the permit and allowing entry to begin.
- Terminates the entry and cancels the permit as required.
- Verifies that rescue services are available and that the means for summoning them are operable.
- Removes unauthorized individuals who enter or who attempt to enter the permit space during entry operations.
- Determines, whenever responsibility for a permit space entry operation is transferred and at intervals dictated by the hazards and operations performed within the space, that entry operations remain consistent with terms of the entry permit and that acceptable entry conditions are maintained.
- Documents on the entry permit any incidents or circumstances requiring review of the confined space entry program. Such incidents include:
 - (1) Unauthorized entry;
 - (2) The detection of a condition/hazard not authorized by the permit;
 - (3) The occurrence of an injury or near-miss during entry;
 - (4) A change in use or configuration of the space; or
 - (5) Employee complaints about the program.
- Prescribes procedures for coordination of entry when personnel from multiple employers will work simultaneously. IT subcontractors shall follow IT procedures.

5.4.2

Permit System

Before entry is authorized, the Entry Supervisor shall complete and sign an Entry Permit (Attachment 3) to document that all pre-entry requirements in



the approved HASP have been met and that acceptable entry conditions exist. The completed permit shall be posted at the primary entrance to the confined space.

All Entry Permits are valid for a maximum of one (1) work shift, and shall be cancelled by the Entry Supervisor when the shift ends, confined space operations are complete, or whenever a prohibited condition arises in or near the space. All confined spaces shall be securely closed or barricaded whenever the entry permit is cancelled.

Entry Permits must be completely executed and include the following information:

- Identify the permit space to be entered;
- Purpose of the entry;
- Date and duration of the permit;
- Authorized entrants by name;
- Authorized attendants by name;
- The name and signature of the Entry Supervisor originally authorizing entry;
- The name and signature of the current Entry Supervisor;
- The hazards of the permit space to be entered;
- Measures used to isolate the permit space and control hazards;
- Acceptable entry conditions;
- Time and results of periodic atmospheric tests with the initials of the tester;
- Available rescue services and equipment, and how to summon;
- Communication procedures;
- Personal protective equipment, testing equipment and communications equipment; and
- Any additional permits issued to authorize work in the permit space.

Supplemental information regarding the location of each entrant shall be provided as described below:



- The current entry status of all entrants shall be logged on the Field Activity Daily Log (FADL), with a new entry made whenever the entry status of an entrant changes.
- Each entrant shall securely affix a tag bearing their name to the outside lifeline fitting which is attached to a secure point.

5.4.3

Training

- General

Prior to assignment to confined space entry work, all employees shall receive training in the hazards of confined spaces, work practices to control these hazards, and duties to be performed. Employee proficiency shall be established by testing and/or practical demonstration.

The IT Training Department shall maintain training records to include employee name and signature, date of training, and signature of the trainer.

Basic training requirements shall include:

- Entrants/Attendants: Hazards & Protection or Hazards Protection Limited & Site Remediation & Confined Space Update (or equivalent). Note that H&P done prior to April 1993 requires Confined Space Update.
- Entry Supervisors and/or Personnel Conducting Atmospheric Testing: Qualified Person (or equivalent).
- Rescue Service Personnel: Personnel assigned to provide emergency entry and rescue services shall be trained annually in the proper use of personal protective and rescue equipment. Such training shall include a simulated rescue exercise. In addition, rescue personnel shall be trained in the hazards and proper work practices for handling blood or other potentially infectious materials while providing first aid or CPR, and comply with the other requirements of IT Procedure HS512. All rescue personnel shall have current training and certification for first-aid and CPR.

Equivalent training must be approved by the IT Training Department prior to assignment to entry duties.

Personnel assigned to attendant duties shall be trained in non-entry rescue procedures.



- Site-Specific

Health and Safety Plan orientation and Tailgate Safety meetings will be used to provide site-specific training.

5.5 Retention of Inspection and Test Logs

A copy of all Entry Permits and other documents related directly to the PRCs entry (e.g., hot work permits, FADLs, etc.) shall be forwarded to the local or project HS Department.

5.6 Confined Space Entry Program Review

Annually in January, the HS professional responsible for each location performing confined space entry operations shall review all entry permits for incidents or problems occurring during entry. Incidents or problems include injuries, accidents, unauthorized entries, or any other event potentially indicating that improvements can be made in the confined space entry program. After review with appropriate operations personnel, recommendations for program

revision shall be forwarded to the Corporate HS office for review by the Corporate Safety Council.

6.0 EXCEPTION PROVISIONS

Variances to this procedure (HS300) may be requested in accordance with the requirements of IT Procedure HS013 Health and Safety Procedure Variance.

7.0 CROSS REFERENCES

HS013 Health and Safety Procedure Variance
HS052 Health and Safety Plans
HS301 Confined Spaces, Marine
HS302 Confined Spaces, Leaded Product
HS315 Control of Hazardous Energy Sources
HS512 Bloodborne Pathogens
HS601 Respiratory Protective Program

8.0 ATTACHMENTS

1. Responsibility Matrix
2. Hand Signals
3. Entry Permit

INTERNATIONAL TECHNOLOGY CORPORATION

CONFINED SPACES Responsibility Matrix

ATTACHMENT 1



<u>Action</u>	<u>Procedure Section</u>	<u>Local HS</u>	<u>Corn HS</u>	<u>Training Dept.</u>	<u>Location Manager</u>	<u>Entry Supy</u>	<u>Manager</u>
Identify and post all PRCs at IT facilities	5.2	X			X		
Develop HASP, including establishing acceptable entry conditions	5.4.1	X					X
Approve HASP prior to work:	5.4.1	X					X
If IDLH or Level A:	5.4.1	X	X				X
Provide adequate supplies of required equipment (e.g., rescue, air testing) at location	5.4.1				X		
Train adequate personnel in each category	5.4.3				X		
Retain training records	5.4.3			X	X		
Complete HASP requirements for entry, executive entry permit, and test/monitor	5.4.1					X	
Cancel entry permits	5.4.2					X	
Reclassify PRCs as non-permit-required	5.3					X	
Retain documents	5.5	X					
Program review	5.6	X	X		X		

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ATTACHMENT 2

HAND SIGNALS

- THE VERY NATURE OF OUR WORK REQUIRES THE USE OF PROTECTIVE CLOTHING THAT IN ITSELF MAY RESTRICT OUR ABILITY TO COMMUNICATE ORALLY.
- IN AS MUCH AS CERTAIN VITAL COMMUNICATIONS ARE NECESSARY FOR A SAFE EFFICIENT OPERATION, A LIMITED NUMBER OF HAND SIGNALS HAVE BEEN DEVISED TO HELP RESOLVE THIS PROBLEM.
- SIGNALS COVERING TWO CATEGORIES, THOSE FOR PERSONAL SAFETY AND FOR OPERATIONAL USE WILL BE DISCUSSED.

Personal Safety

- IMMEDIATE PERSONAL SAFETY PROBLEMS COULD INCLUDE BREATHING AIR SYSTEM MALFUNCTION, LIFELINES PROBLEMS AND GENERAL DISTRESS.
THE FOLLOWING SIGNALS WILL BE USED FOR ALL IT EMPLOYEES
 - BREATHING AIR PROBLEMS



ONE HAND HOLDING THROAT
INDICATES A BREATHING
AIR PROBLEM



BOTH HANDS HOLDING THROAT
INDICATES A SERIOUS
BREATHING AIR PROBLEM,
SUCH AS NO AIR ,
VAPORS GETTING THROUGH, ETC.

HAND SIGNALS (con't)

● LIFE LINE TEST

ONE TUG ON EITHER END OF A LIFE LINE MUST BE ANSWERED BY TWO TUGS. IF A TUG IS NOT ANSWERED IT INDICATES A FOULED LINE MAN MUST BE REMOVED AND LINE CLEARED.

THREE TUGS , OR A STEADY PULL ON THE LINE INDICATES THAT THE MAN SHOULD LEAVE THE CONTAMINATED AREA.

● GENERAL PROBLEM



BOTH HANDS RAISED ABOVE THE HEAD ARE INDICATIVE OF SOME TYPE OF PROBLEM WHICH MAY REQUIRES EXIT FROM THE AREA AND REMOVAL OF PROTECTIVE CLOTHING.

ONCE THE SIGNAL IS RECEIVED AND UNDERSTOOD, THE PROBLEM CAN POSSIBLY BE FURTHER CLARIFIED BY POINTING TO AFFECTED AREA.



HAND SIGNALS (con't)



INDEX FINDER TWIRLING IN AN UPWARD
MOTION WHILE OPEN PALM COVERS
THE FINGER: OPEN SLOWLY

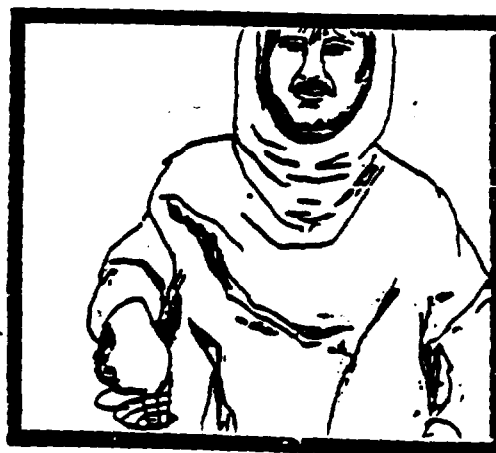
INDEX FINDER TWIRLING IN A DOWNWARD
MOTION WHILE OPEN PALM COVERS THE
FINGER: CLOSE SLOWLY



WHILE OPENING OR CLOSING VALVES, VENTS, ETC.,
THE FOLLOWING CAN BE USED:



INDEX FINGER TWIRLING IN
AN UPWARD MOTION:
OPEN NORMALLY



INDEX FINGER TWIRLING IN A
DOWNWARD MOTION:
CLOSE NORMALLY



Operational Safety HAND SIGNALS (con't)



**1 HAND MADE INTO FIST
WITH THUMB DOWN :
CLOSE EMERGENCY**



**1 HAND MADE INTO FIST WITH
THUMB UP: OPEN EMERGENCY**

**CHECKING FOR MATERIAL IN A VESSEL WHILE IN PROTECTIVE
CLOTHING CAN BE ANSWERED AS FOLLOWS:**



**TWO HANDS CLASPED IN FIST
WITH THUMBS POINTING UP:
VESSEL HAS MATERIAL IN IT.**



HAND SIGNALS (con't) Operational Safety

CHECKING FOR MATERIAL IN A VESSEL WHILE IN
PROTECTIVE CLOTHING CAN BE ANSWERED AS FOLLOWS:



UMPIRE SIGNALING RUNNER SAFE:
VESSEL EMPTY

HAND SIGNALS (con't)



**SLASHING SIGNAL ACROSS THROAT:
CLOSE DOWN WHATEVER YOU ARE DOING—STOP**



**FIST IN PUMPING MOTION:
CLOSE DOWN WHATEVER YOU ARE DOING—STOP**



ENTRY PERMIT
PERMIT-REQUIRED CONFINED SPACE (PRCS)

ATTACHMENT 3

Division/Location _____ Job No. _____
Customer _____ Address _____
Location of Job _____ Identity of PRCS _____
Describe Hazards of PRCS (Chemical, Physical) _____

Chemical introduced into Space _____

Purpose This Permit Authorized _____

CHECKLIST	YES	DOES NOT APPLY	PERSONAL PROTECTIVE EQUIPMENT (Circle)
All lines leading to and from confined space have been blinded or disconnected			EYEFACE Chemical Goggles Face Shield Safety Glasses
Electrical service disconnected or locked out			EXTREMITIES Hard Hat Gloves (Material _____) Hoods Boots (Material _____) Socks
All grounding and bonding cables in place			BODY Suit (Level _____, Material _____)
All lighting, fittings, power equipment, and extension cords are explosion-proof			RESPIRATORY SCBA Air Line Egress System Air Purifying (Cartridge _____) Powered Air Purifying (Cartridge _____)
Ground Fault Circuit Indicator (GFCI) checked and functioning			OTHER Hearing Protection Harness & Lifeline Chert or Parachute
All ignition sources have been isolated			RESCUE EQUIPMENT Mechanical Extraction Device First Aid Kit SCBA Other (Specify) _____
All respiratory equipment and alarms checked and functional			NON-JT RESCUE TEAM Instructions to Summon Rescue _____
All safety harnesses and life lines checked			COMMUNICATION Lifeline "Tug" Signals (See HASP) Air Powered Horn Signals (See HASP) Other _____
All required PPE checked and in use			
All entrants are confined space trained			
All entrants are trained in the use, care, and limitations of respirators and PPE			
Attendant trained in emergency procedures			
Attendant(s) trained in rescue procedures			
Outside rescue service will be used and they have been notified of this entry			
Appropriate rescue equipment available and checked			
Ventilation system in use and effective			
Entrant(s) can achieve a gas-tight seal with respirator			
Entrant(s) are not wearing contact lenses			
All tests have been completed and indicate that entrance requirements have been met			
Appropriate warning signs have been posted and unauthorized personnel have been excluded from the PRCS and area			
IF THE ANSWER TO ANY OF THE ABOVE QUESTIONS IS NO, ENTRY IS NOT PERMITTED.			
OTHER PERMITS ISSUED FOR WORK IN PRCS: _____			
OTHER HAZARD CONTROL PROCEDURES OR INSTRUCTIONS: _____			

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TEST DATA
Oxygen, Flammability and Toxic Components:

[illegible]

AUTHORIZED ENTRANTS

AUTHORIZED ATTENDANTS

RESCUE PERSONNEL

RESCUE PERSONNEL

Diagram the confined space, indicate location of manways and ventilators. Indicate location(s) where tests conducted.

-) (- Manway
- - Ventilator
- X - Test Location

ACCEPTABLE ENTRY CONDITIONS

- 1) Entry Permit Completely Filled Out
- 2) Oxygen between 20-23.5%
- 3) Combustible Gases Below 10% LEL
- 4) Permissible Levels of Toxic Gases (List)

5) Other

[illegible]

PRCS SAFE FOR ENTRY

DATE/TIME _____ / _____ NAME ENTRY SUPERVISOR _____ SIGNATURE _____

CURRENT ENTRY SUPERVISOR (IF DIFFERENT) _____

ENTRY PERMIT EXPIRES DATE/TIME _____ / _____ (No longer than 1 shift)

ENTRY PERMIT CANCELLED

DATE/TIME _____ / _____ SIGNATURE _____

REASON ☒ Work Complete Authorized Conditions not met Incident

DESCRIBE PROBLEMS DURING ENTRY AND RESOLUTION

RECLASSIFICATION TO NON-PERMIT-REQUIRED CONFINED SPACE

Describe hazard removal methods, without use of ventilation.

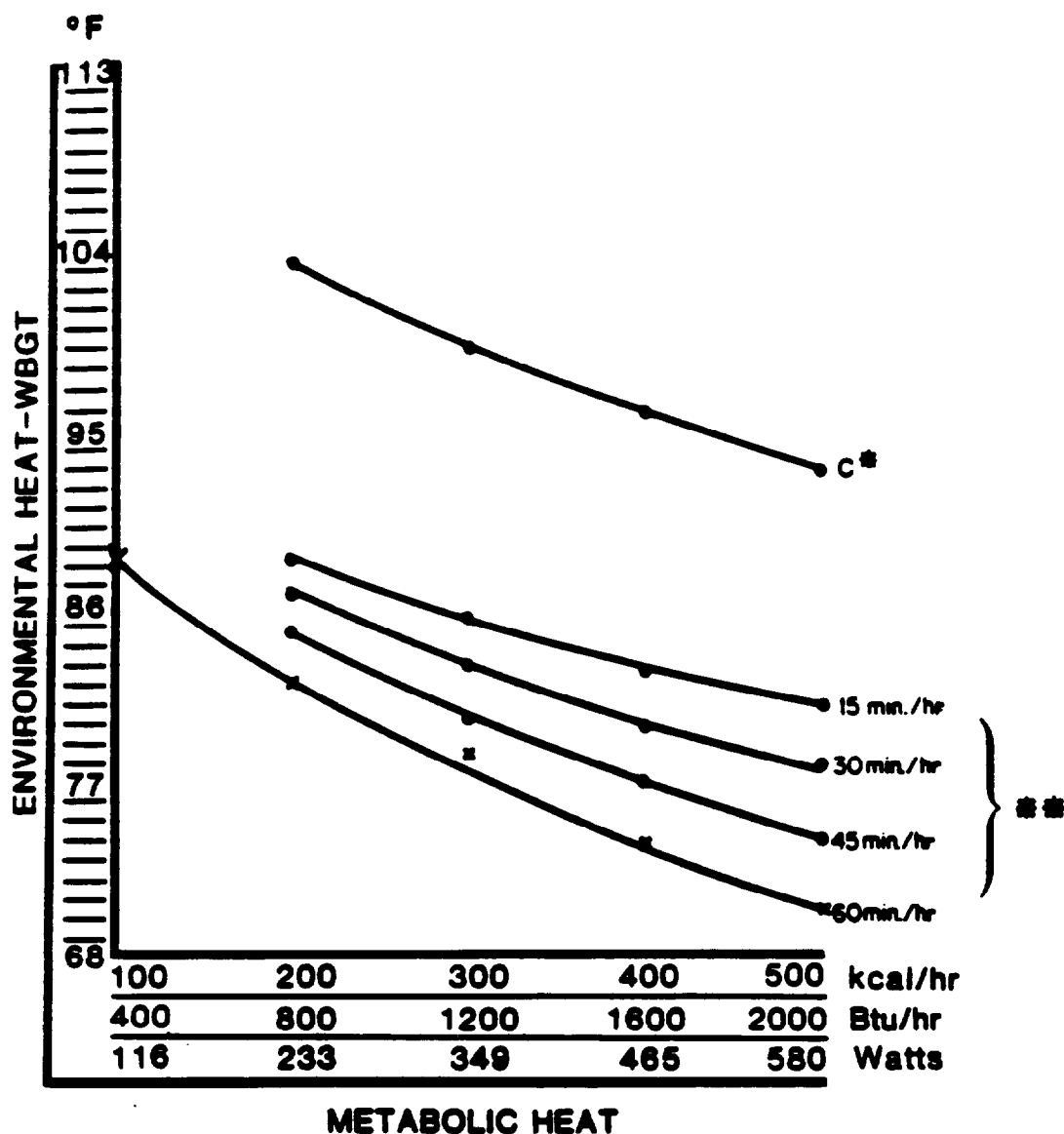
TESTING VERIFICATION SHOWN AT TIME _____ ON TEST DATA CHART ABOVE.

DATE/TIME ____/____ ENTRY SUPERVISOR SIGNATURE _____

REVIEWED BY _____ DATE _____

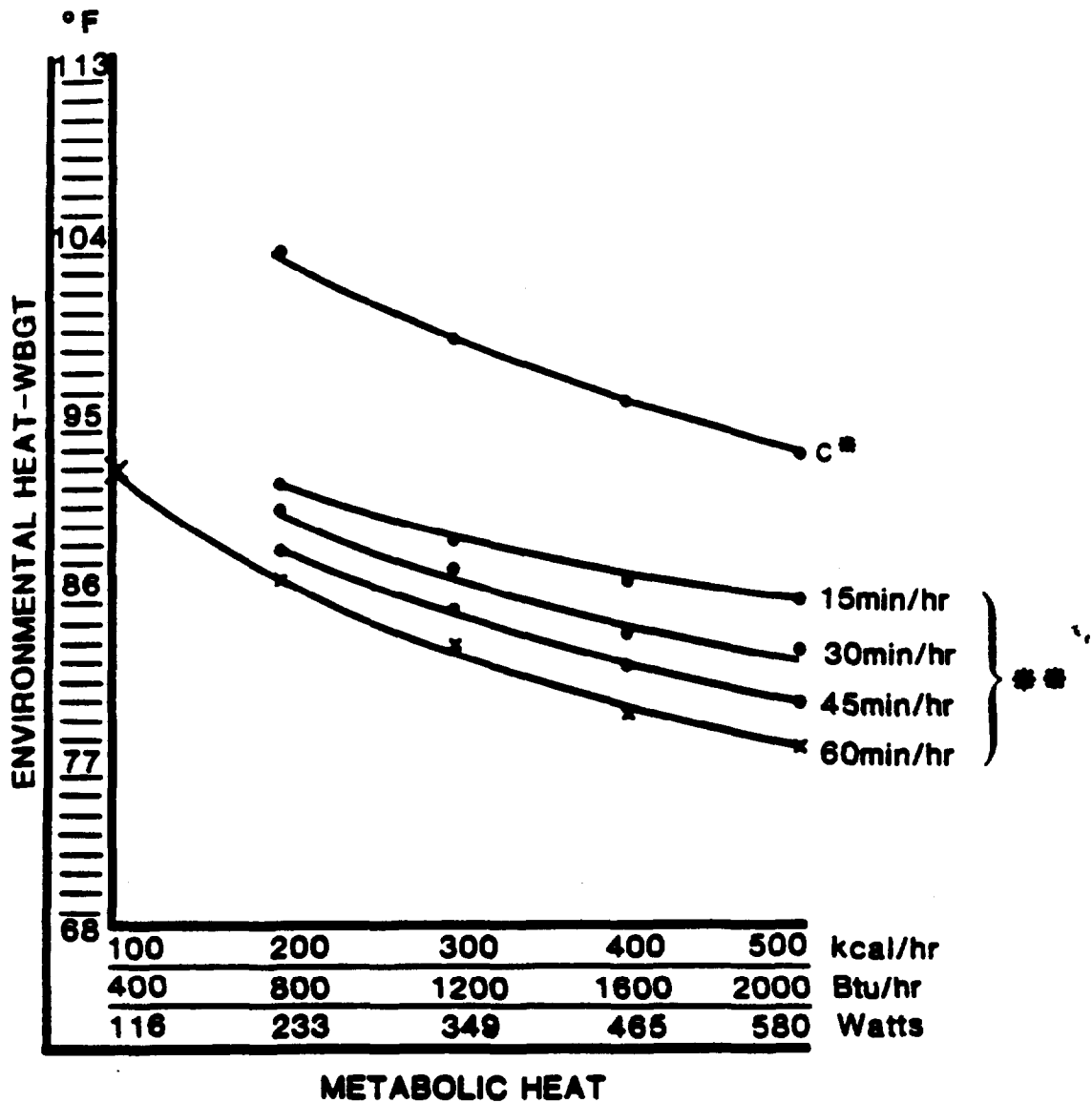
ATTACHMENT E

RECOMMENDED HEAT STRESS GUIDELINES FOR UNACCLIMATED/ACCLIMATED WORKERS IN HOT ENVIRONMENTS



Recommended Heat Stress Guidelines for Unacclimated Workers in Hot Environments

- * C= Ceiling Limit - No work should be performed without body cooling provided
- ** Work-Rest Regimen - Minutes worked per hour



Recommended Heat Stress Guidelines for Acclimated Workers in Hot Environments

* C= Ceiling Limit - No work should be performed without body cooling provided

** Work-Rest Regimen = Minutes worked per hour

ASSESSMENT OF EMPLOYEE WORK LOAD IN HOT ENVIRONMENTS

A. BODY POSITION AND MOVEMENT	kcal/min
Sitting	0.3
Standing	0.6
Walking	2.0-23.0
Walking uphill	add 0.8 per meter rise

B. TYPE OF WORK	Average kcal/min	Range kcal/min
Hand work		
Light	0.4	0.2-1.2
Heavy	0.9	
Work One Arm		
Light	1.0	0.7-2.5
Heavy	1.8	
Work Both Arms		
Light	1.5	1.0-3.5
Heavy	2.5	
Work Whole Body		
Light	3.5	2.5-9.0
Moderate	5.0	
Heavy	7.0	
Very Heavy	9.0	

C. BASAL METABOLISM	1.0
---------------------	-----

D. SAMPLE CALCULATION	Average kcal/min
Assembling work with heavy hand tools	
1. Standing	0.6
2. Two-arm work	3.5
3. Basal Metabolism	1.0

TOTAL 5.1 kcal/min x 60=306 kcal/hr

EMPLOYEE PHYSIOLOGICAL MONITORING RECORD FOR HEAT STRESS

Attachment 4 (Guideline)
ITC Pro 9533.1

Employee Name _____ Date _____ Employee SS# _____
Division _____ Start Time _____ Location _____
P.C.# _____ Stop Time _____ Job Number _____
Health & Safety Coordinator _____ Supervisor _____

TEMPERATURES

A. INITIAL READING

1. Ambient Air Temperature _____
2. Baseline Oral Temperature _____
3. WBGT _____

B. AFTER FIRST WORK PERIOD

1. Ambient Air Temperature _____
2. Oral Temperature _____
3. WBGT _____

C. AFTER SECOND WORK PERIOD

1. Ambient Air Temperature _____
2. Oral Temperature _____
3. WBGT _____

D. AFTER THIRD WORK PERIOD

1. Ambient Air Temperature _____
2. Oral Temperature _____
3. WBGT _____

E. AFTER FOURTH WORK PERIOD

1. Ambient Air Temperature _____
2. Oral Temperature _____
3. WBGT _____

F. AFTER FIFTH WORK PERIOD

1. Ambient Air Temperature _____
2. Oral Temperature _____
3. WBGT _____

HEART RATE

A. INITIAL READING

1. Baseline Heart Rate _____ B/min

B. AFTER FIRST WORK PERIOD

1. Heart Rate _____ B/min

C. AFTER SECOND WORK PERIOD

1. Heart Rate _____ B/min

D. AFTER THIRD WORK PERIOD

1. Heart Rate _____ B/min

E. AFTER FOURTH WORK PERIOD

1. Heart Rate _____ B/min

F. AFTER FIFTH WORK PERIOD

1. Heart Rate _____ B/min

This completed form should be retained in project file

B/min=Beats/ per minute

ATTACHMENT F
SITE FORMS



INTERNATIONAL
TECHNOLOGY
CORPORATION

SUPERVISOR'S EMPLOYEE INJURY REPORT

This is an official document to be initiated by the employee's supervisor. Please answer all questions completely. This report must be forwarded to the employee's Regional Health and Safety office within 24 hours of the injury.

Injured's Name _____ Sex _____ S.S. No. _____ Birthdate _____
Home Address _____ City _____ State _____ Zip _____ Phone _____
Job title _____ Employee's P.C. _____ Hire date _____ Hourly wage _____

Date of incident _____ Time _____ Time reported _____ To whom? _____

Client name _____ Client address _____ Time shift began _____

Exact location of incident _____ Did employee leave work? ☐ No ☐ Yes When _____

Has employee returned to work? ☐ No ☐ Yes When _____ Did employee miss a regularly scheduled shift? ☐ No ☐ Yes

Doctor/Hospital name _____ Address _____

Witness name(s) _____ Statements attached? ☐ No ☐ Yes

Nature of injury _____ Exact body part _____

Medical attention: ☐ None ☐ First aid on site ☐ Doctor's office ☐ Hospital ER ☐ Hospitalized

Job assignment at time of incident _____ Job: _____ Phase _____ Task: _____ Subtask _____

Describe incident _____

What unsafe physical condition or unsafe act caused the incident? _____

What corrective action has been taken to prevent recurrence? _____

Supervisor/Foreman _____ (Print) _____ Signature _____ Date _____

MANAGER

Comments on incident and corrective action _____

Manager's name _____ (Print) _____ Signature _____ Date _____

HEALTH AND SAFETY

Concur with action taken? ☐ No ☐ Yes Remarks _____

OSHA Classification:

☐ Incident only ☐ First aid ☐ No lost workdays ☐ Lost workdays ☐ Restricted activity ☐ Fatality

Days away from work _____ Days restricted work _____ Total days charged _____

☐ State jurisdiction ☐ Federal L&H ☐ Date ER submitted _____ Which claims office _____

Coding: A. Injury type or illness _____ B. Injured body parts _____ C. Activity at time of accident _____ D. Injury cause code _____

E. Agent code _____ F. Safety rule violated code _____ G. Accident prevention code _____

Name _____ (Print) _____ Signature _____ Date _____

IT CORPORATION WORKERS COMPENSATION ACCIDENT CODING

A. TYPE OF INJURY OR ILLNESS

- 10 Laceration
- 11 Puncture
- 12 Contusion
- 13 Abrasion
- 14 Crushing Injury
- 15 Foreign Body
- 22 Burn-Thermal
- 24 Burn-Chemical
- 26 Fracture
- 28 Amputation
- 30 Hernia-Inginal
- 31 Hernia-Other
- 32 Strain
- 34 Sprain
- 36 Dislocation
- 38 Heat Exhaustion/Heat Stress
- 40 Drowning
- 42 Asphyxiation
- 44 Systemic Poisoning
- 46 Dermatitis
- 48 Inflammation/Irritation
- 49 Pneumoconiosis
- 50 Respiratory Condition Due to Toxic Agents
- 51 Radiation
- 52 Heart Disease
- 54 Liver Damage
- 56 Kidney Damage
- 58 Mental Stress/Psychiatric
- 60 Repeated Trauma
- 62 Hearing Loss
- 64 Cancer
- 66 Other Occupational Disease
- 68 Fatality
- 70 Infectious Respiratory Disease
- 72 Miscellaneous-Not Otherwise Coded
- Not Work Related

B. INJURED BODY PARTS

- 10 Head
- 12 Face
- 14 Ear
- 16 Eye
- 17 Nose
- 18 Teeth/Mouth
- 20 Neck
- 22 Shoulder
- 24 Chest
- 26 Abdomen
- 28 Upper Arm
- 30 Elbow
- 32 Lower Arm
- 34 Wrist
- 36 Hand
- 38 Thumb
- 40 Fingers
- 42 Back/Spine
- 44 Hip/Pelvis
- 46 Thigh
- 48 Knee
- 50 Lower Leg
- 52 Ankle
- 54 Heel
- 56 Metatarsal
- 58 Toes
- 60 Lungs
- 62 Heart
- 63 Liver
- 64 Other Internal Organs
- 66 Psyche
- Not Otherwise Coded

C. ACTIVITY AT TIME OF ACCIDENT

- 10 Driving

- 14 Operating Heavy Equipment
- 16 Hot Work
- 18 Hydroblasting
- 19 Washing
- 20 Cutting
- 22 Lifting Or Manual Carrying
- 24 Walking
- 26 Running
- 28 Jumping
- 30 Hammering
- 32 Sampling
- 34 Loading/Unloading Vacuum Trucks
- 36 Pulling Vacuum Hoses
- 38 Climbing
- 40 Shoveling
- 41 Sweeping
- 42 Pulling
- 44 Pushing
- 46 Opening Or Closing
- 48 Reaching Or Stretching
- 50 Standing, Observing Or Inspecting
- 52 Piling Or Stacking
- 54 Maintenance
- 56 Training
- 58 Chemical Packaging
- 60 Laboratory Analysis
- 62 Washing Glassware
- 64 Tank Cleaning
- 66 Asbestos Removal
- 68 Nuclear Decontamination
- 70 Drilling
- 72 Pond Maintenance
- 74 Using Hand Tools
- 76 Not Otherwise Classified

D. INJURY CAUSE CODE

STRUCK BY

- 01 Falling Object
- 02 Flying Object
- 03 Swinging Object
- 04 Tipping, Sliding Or Rolling Object
- 05 Motor Vehicle
- 06 Altercation
- 07 All Other Moving Objects

STRAIN OR OVEREXERTION

- 10 Lifting (Back)
- 11 Lifting (Other Than Back)
- 12 Pulling Or Pushing
- 13 Reaching, Twisting Or Over Extending
- 14 Cumulative Trauma

FALL FROM ELEVATION

- 20 Manway Opening
- 21 Ladder Or Scaffold
- 22 Machinery Or Stationary Equipment
- 23 Piled Materials
- 24 Stairs
- 25 Heavy Equipment
- 26 Vacuum Trucks
- 27 Other Trucks

FALL FROM SAME LEVEL

- 30 Slip
- 31 Trip

STRUCK AGAINST

- 40 Moving Object
- 41 Stationary Object
- 42 Sharp Object

CAUGHT IN, UNDER OR BETWEEN

- 50 Running Or Meshing Objects
- 51 Point Of Operation, Machinery Or Equipment
- 52 Other Than Point Of Operation
- 53 Moving And Stationary Objects
- 54 Two Moving Objects

EXPOSURE TO

- 60 Cold
- 61 Heat
- 62 Electric Current
- 63 Chemicals
- 64 Radiation
- 65 Noise
- 66 Dust
- 68 Poison Oak/Ivy

MISCELLANEOUS

- 70 Inhalation
- 71 Ingestion
- 72 Absorption
- 73 Job Stress
- 74 Insect Or Animal Bites

E. AGENT CODE

- 10 Grading/Compacting Equipment
- 11 Excavating/Drilling Equipment
- 12 Crane
- 14 Vacuum Truck
- 16 End Dump Truck
- 18 Automobile
- 19 All Other Motor Vehicles
- 20 Hand Tools
- 22 Power Tools
- 24 Laboratory Glassware
- 26 Laboratory Equipment
- 28 Sampling Equipment
- 30 Hoses
- 32 Hydroblaster
- 34 High Pressure Washing
- 36 Hand Truck
- 38 Ladder
- 40 Scaffold
- 42 Stairs
- 44 Slippery Surface
- 45 Ice Or Snow
- 46 Uneven Surface
- 48 Hot Liquid/Gases
- 50 Toxic Material
- 52 Oxygen Deficient Atmosphere
- 54 Flammable Materials
- 56 Electric Current
- 58 Radiation
- 60 Door
- 62 Compressed Gas
- 64 Gas Cylinder
- 66 Respirator/Breathing Apparatus
- 68 Protective Clothing
- 70 Other Clothing/Jewelry
- 72 Mobile Treatment Equipment
- 73 Fixed Treatment Facility

F. SAFETY RULE VIOLATED CODE

- 01 IT Safety Rule
- 02 Client Safety Rule
- 03 Compressed Air
- 05 Wire Rope, Clips And Slings
- 06 Locking Out Equipment
- 07 Piling And Blocking Of Materials
- 08 High Voltage Rules
- 09 Eye And Face Protection
- 10 Portable Ladders
- 11 Underground Construction

12. TRAINING AND EDUCATION

- 13 Safety
- 14 Accident
- 15 Cleaning And Repairing
- 16 Protective Clothing/Equipment
- 17 Flammable And Combustible Liquids
- 18 Job Procedure
- 19 Portable Electrical Tools
- 21 Flammable Gases
- 22 Fall Protection
- 23 Grinding Wheel
- 24 Machine Guarding
- 25 Scaffolding
- 26 Handling Materials
- 27 Horse Play And Fighting
- 28 Housekeeping
- 29 Unauthorized Work Area
- 30 Weighing Equipment
- 31 Machine Operations
- 32 Hand Tools
- 35 Crane Rules
- 37 Acids And Caustics
- 38 Tripping And Slipping Hazards
- 42 Respirator Protection
- 43 Hearing Protection
- 44 Confined Space
- 45 Late Report Of Minor Accident
- 46 Temporary Cords And Jumps
- 47 Improper Operation Of Equipment
- 48 Hydroblast
- 50 Motor Vehicle
- 51 Driving Under the Influence Of Alcohol
- 52 Fork Lifts
- 54 Air Compressors And Receivers
- 60 No Safety Rule Violation
- 62 Did Not Review Job With Health and Safety

G. ACCIDENT PREVENTION CODE

- 02 Install Guards Or Safety Device
- 04 Install Warning System
- 06 Store Flammables And Combustibles In Approved Manner
- 08 Block Or Secure Material Or Machinery Against Unexpected Movement
- 10 Additional Housekeeping Needed
- 12 Remove Protruding Objects
- 14 Maintain Necessary Clearance
- 16 Control Or Remove Atmospheric Conditions
- 18 Maintain Proper Piling Or Storage
- 20 Install Additional Illumination
- 22 Personal Protective Equipment
- 24 Review Project With Health and Safety

INSTRUCTION RE-INSTRUCTION

- 50 Use Of Equipment
- 52 Proper Operation Or Working Speed
- 54 Use Of Warning Devices
- 56 Proper Use Of Safety Devices
- 58 Use Of Tools In Good Repair
- 60 Proper Lifting Practices
- 62 De-Energizing Equipment Before Adjusting Or Repairing
- 64 Stay Off Moving Equipment
- 66 Horse Play
- 68 Wearing Of Personal Protective Equipment
- 70 Proper Chemical Handling Procedure
- 72 Safety Work Rules
- 74 IT Training Class

JOB SAFETY & HEALTH PROTECTION

The Occupational Safety and Health Act of 1970 provides job safety and health protection for workers by promoting safe and healthful working conditions throughout the Nation. Provisions of the Act include the following:

Employers

All employers must furnish to employees employment and a place of employment free from recognized hazards that are causing or are likely to cause death or serious harm to employees. Employers must comply with occupational safety and health standards issued under the Act.

Employees

Employees must comply with all occupational safety and health standards, rules, regulations and orders issued under the Act that apply to their own actions and conduct on the job.

The Occupational Safety and Health Administration (OSHA) of the U.S. Department of Labor has the primary responsibility for administering the Act. OSHA issues occupational safety and health standards, and its Compliance Safety and Health Officers conduct jobsite inspections to help ensure compliance with the Act.

Inspection

The Act requires that a representative of the employer and a representative authorized by the employees be given an opportunity to accompany the OSHA inspector for the purpose of aiding the inspection.

Where there is no authorized employee representative, the OSHA Compliance Officer must consult with a reasonable number of employees concerning safety and health conditions in the workplace.

Complaint

Employees or their representatives have the right to file a complaint with the nearest OSHA office requesting an inspection if they believe unsafe or unhealthful conditions exist in their workplace. OSHA will withhold, on request, names of employees complaining.

The Act provides that employees may not be discharged or discriminated against in any way for filing safety and health complaints or for otherwise exercising their rights under the Act.

Employees who believe they have been discriminated against may file a complaint with their nearest OSHA office within 30 days of the alleged discriminatory action.

Citation

If upon inspection OSHA believes an employer has violated the Act, a citation alleging such violations will be issued to the employer. Each citation will specify a time period within which the alleged violation must be corrected.

The OSHA citation must be prominently displayed at or near the place of alleged violation for three days, or until it is corrected, whichever is later, to warn employees of dangers that may exist there.

Proposed Penalty

The Act provides for mandatory civil penalties against employers of up to \$7,000 for each serious violation and for optional penalties of up to \$7,000 for each nonserious violation. Penalties of up to \$7,000 per day may be proposed for failure to correct violations within the proposed time period and for each day the violation continues beyond the prescribed abatement date. Also, any employer who willfully or repeatedly violates the Act may be assessed penalties of up to \$70,000 for each such violation. A minimum penalty of \$5,000 may be imposed for each willful violation. A violation of posting requirements can bring a penalty of up to \$7,000.

There are also provisions for criminal penalties. Any willful violation resulting in the death of any employee, upon conviction, is punishable by a fine of up to \$250,000 (or \$500,000 if the employer is a corporation), or by imprisonment for up to six months, or both. A second conviction of an employer doubles the possible term of imprisonment. Falsifying records reports, or applications is punishable by a fine of \$10,000 or up to six months in jail or both.

Voluntary Activity

While providing penalties for violations, the Act also encourages efforts by labor and management, before an OSHA inspection, to reduce workplace hazards voluntarily and to develop and improve safety and health programs in all workplaces and industries. OSHA's Voluntary Protection Programs recognize outstanding efforts of this nature.

OSHA has published Safety and Health Program Management Guidelines to assist employers in establishing or perfecting programs to prevent or control employee exposure to workplace hazards. There are many public and private organizations that can provide information and assistance in this effort, if requested. Also, your local OSHA office can provide considerable help and advice on solving safety and health problems or can refer you to other sources for help such as training.

Consultation

Free assistance in identifying and correcting hazards and in improving safety and health management is available to employers without citation or penalty, through OSHA-supported programs in each State. These programs are usually administered by the State Labor or Health department or a State university.

Posting Instructions

Employers in States operating OSHA approved State Plans should obtain and post the State's equivalent poster.

Under provisions of Title 29, Code of Federal Regulations, Part 1903.2(a)(1) employers must post this notice (or facsimile) in a conspicuous place where notices to employees are customarily posted.

More Information

Additional information and copies of the Act, specific OSHA safety and health standards and other applicable

Atlanta, GA
Boston, MA
Chicago, IL

(404) 347-3573
(617) 565-7164
(312) 353-2220

Lynn Martin

Washington, D.C.
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OSHA 2203



RELEASE OF LIABILITY

The undersigned hereby acknowledges that he/she is entering on properties where International Technology Corporation personnel are and/or may have worked. Entry is at his/her sole risk. The undersigned agrees to indemnify and hold harmless IT Corporation, its officers, employees, and agents from any and all claims and damages whatsoever including attorneys' fees resulting directly or indirectly from such entry for any cause whatsoever.

The undersigned recognizes and is aware of the dangers inherent on the site and hazards, including the risks associated with hazardous waste materials related to ongoing work, and executes the above indemnity with full knowledge of its consequences.

Name _____

Signature _____

Date _____

Witnessed By _____

NUMBERS TO KNOW:

EMERGENCY NUMBERS

Ambulance.....
Doctor.....
Hospital.....
Fire Dept.....
Police.....
Sheriff.....
U.S. EPA (24 Hour Hotline)800-424-8802
Chemtrec.....800-424-9300
National Poison
Control Center.....404-588-4400
.....
.....
.....

UTILITY NUMBERS

Electric Co.....
Water Co.....
Gas Co.....



MUST BE COMPLETED WITHIN 72 HOURS

ACCIDENT/INJURY INVESTIGATION

Date _____ Profit/Cost Center _____ Date of Accident/Injury _____
Employee Name _____
Supervisor Name _____
Job Number/Name _____
Location of Accident/Injury _____

• Accident/Injury Classification

<u>Injury</u>	<input type="checkbox"/> Near Miss	<u>Vehicle</u>	<input type="checkbox"/> Chargeable	<u>DOT</u>	<input type="checkbox"/> DOT Vehicle
	<input type="checkbox"/> First Aid		<input type="checkbox"/> Non-Chargeable		<input type="checkbox"/> DOT Reportable
	<input type="checkbox"/> OSHA Recordable		<input type="checkbox"/> Not at Fault		
	<input type="checkbox"/> Lost Workday			<u>General Liability</u>	<input type="checkbox"/>

• Description (Provide facts, describe how incident occurred, provide diagram (on back) or photos)

• Analysis 1 (What unsafe acts or conditions contributed to the incident?)

• Analysis 2 (What systematic or management deficiencies contributed to incident?)

• Corrective Action(s) (List corrective action items, responsible person, scheduled completion date)

• Witnesses (Attach statements or indicate why unavailable)

Investigated By _____
Print Name _____ Signature _____ Date _____

Manager _____
Print Name _____ Signature _____ Date _____

(Attach Additional pages if needed)
ITC Form 140002 6/13/00



PROJECT NO.

[illegible]



INTERNATIONAL
TECHNOLOGY
CORPORATION

GENERAL LIABILITY, PROPERTY DAMAGE, & LOSS REPORT

DIVISION/SUBSIDIARY _____ CENTER NO. _____ DATE _____

ADDRESS _____

HOW DID DAMAGE OR LOSS OCCUR: _____

DESCRIPTION & VALUE (\$) OF DAMAGED/LOST/STOLEN PROPERTY: _____

LOCATION OF DAMAGED/LOST/STOLEN PROPERTY (Before Loss): _____

DATE & TIME OF DAMAGE, LOSS OR THEFT: Date: _____ Time: _____ a.m. / p.m.

OWNER OR DAMAGED/LOST/STOLEN PROPERTY:

Name _____ Phone No. () _____

Address _____ City _____

Employer & Address _____

INJURED PARTIES (Also complete a Supervisors Employee Injury Report if an IT Employee):

1. Name _____ Phone No. () _____

Address _____ City _____

Employer & Address _____

1. Name _____ Phone No. () _____

Address _____ City _____

Employer & Address _____

WITNESSES:

1. Name _____ Phone No. () _____

Address _____ City _____

Employer & Address _____

2. Name _____ Phone No. () _____

Address _____ City _____

Employer & Address _____

WERE PICTURES TAKEN? ☐ YES ☐ NO

WERE POLICE NOTIFIED? ☐ YES ☐ NO DEPT. _____ REPORT NO. _____

COMPLETED BY: _____

(Print name)

(Signature)

(Date)

MANAGER _____

(Print name)

(Signature)

(Date)

ITC FORM H3020C 8/13/83

USE BACK SIDE IF NECESSARY

IT Corporation is a wholly owned subsidiary of International Technology Corporation

DAILY VEHICLE INSPECTION

Mileage: _____

BRAKES		HOSPITAL LOCATION MAP	
SEAT BELTS		PROOF OF INSURANCE	
TIRES		LIGHTS/REFLECTORS	
HORN		WINDSHIELD WIPERS	
GLASS		BACKUP ALARM	
MIRRORS		FIRE EXTINGUISHER	
DEFROSTER		EXHAUST SYSTEM	
STEERING SYSTEM		FLUID LEVELS	
ELECTRICAL SYSTEM		VISIBLE DAMAGE	

✓ = OK
N/A = Not applicable
X = Defective

**These items are to be checked each shift before operating this piece of equipment.
Report ALL items requiring repair to Supervisor.**

NOTES: 	
OPERATOR/INSPECTOR: _____	DATE _____



INTERNATIONAL
TECHNOLOGY
CORPORATION

VEHICLE ACCIDENT REPORT

IT Vehicle

DRIVER _____ ACCIDENT DATE _____ DRIVERS LICENSE _____ STATE _____
ADDRESS _____
CITY _____ STATE _____ STATE _____ ZIP _____
WORK PHONE # _____ SSN _____ POB _____
VEHICLE # _____ YEAR _____ MAKE _____ MODEL _____ LICENSE PLATE # _____
STATE _____ VEHICLE OWNER: ☐ IT CORP. ☐ LEASED/RENTED ☐ PRIVATE VEHICLE
VEHICLE TYPE: ☐ COMMERCIAL MOTOR VEHICLE ☐ NON-COMMERCIAL
IF NOT OWNED: OWNER _____ PHONE # _____
ADDRESS _____ STATE _____ ZIP _____
VEHICLE DAMAGE _____
OF VEHICLES TOWED FROM SCENE _____ NUMBER OF INJURIES _____ NUMBER OF FATALITIES _____
WERE HAZARDOUS MATERIALS RELEASED? ☐ YES ☐ NO IF YES, DESCRIBE MATERIALS _____

Other Vehicle(s)
Use separate sheet if more than one

DRIVER _____ DRIVERS LICENSE _____ STATE _____
ADDRESS _____
CITY _____ STATE _____ STATE _____ ZIP _____
PHONE # _____ SSN _____
OWNERS NAME (CHECK IF SAME AS DRIVER ☐) _____
ADDRESS _____
CITY _____ STATE _____ ZIP _____
INSURANCE COMPANY _____ POLICY # _____
AGENT'S NAME _____ PHONE # _____
ADDRESS _____
CITY _____ STATE _____ ZIP _____
VEHICLE: YEAR _____ MAKE _____ MODEL _____ PLATE # _____ STATE _____
VEHICLE DAMAGE _____
PASSENGERS: ☐ YES (LIST ON REVERSE) ☐ NO INJURIES: ☐ YES (LIST REPAIRS & ADDRESSSES ON REVERSE) ☐ NO

Accident Description

DATE _____ TIME _____ A.M. or P.M.
LOCATION (CITY, STATE) _____
DESCRIPTION OF ACCIDENT _____
WITNESS _____ PHONE # _____
ADDRESS _____
POLICE OFFICER'S NAME _____ DEPARTMENT _____

EMPLOYEE _____ (PRINT) _____ (SIGNATURE) _____ DATE _____
EMPLOYEE _____ (PRINT) _____ (SIGNATURE) _____ DATE _____

PHONE OR FAX TO CORPORATE HEALTH & SAFETY AND RISK MANAGEMENT
WITHIN 24 HOURS, OR NOT LATER THAN NEXT BUSINESS DAY.
IT PHONE: (800) 370-0222 IT FAX: (800) 701-0227

100000-10-00

[illegible]

'Include copies of all training certificates in this Attachment.



INTERNATIONAL
TECHNOLOGY
CORPORATION

ON-THE-JOB TRAINING RECORD (OJTR)

TRAINEE _____ DIVISION _____

S.S.# _____ - _____ - _____ LOCATION _____

Date: ____/____/____ Mo. Day Year Hrs. Training _____ Instructor _____

SUBJECT: _____

KEY POINTS: _____

PERFORMANCE EVALUATION: _____

Instructing Signature _____ Signature

Trainee Signature _____

**UNDERGROUND/OVERHEAD UTILITY
CHECKLIST**

Project Name/Number _____ Date _____

Location _____

Prepared By _____ Project Manager _____

This checklist must be completed for any intrusive subsurface work such as excavating or drilling. It records the fact that all underground and overhead structures and utilities in the work area are identified and located. The Project Manager shall request utility markouts before the start of field operations to allow the client and utility companies time to complete them. If complete information is not available, a magnetometer survey shall be performed to locate obstacles prior to excavating or drilling.

Procedure

A diagram of the project area depicting the proposed location of excavation or drilling sites must be attached to this form. The diagram must clearly indicate the areas checked for underground structures/utilities, and overhead power lines. This form and the diagram must be signed by the Project Manager, the IT Field Supervisor, and the client representative.

Checklist

Type of Structure	Present	Not Present	Method of Markout
Electric Power Line			
Natural Gas Line			
Telephone Line			
Water Line			
Product Line			
Steam Line			
Sewer Line			
Drain Line			
Underground Tank			
Overhead Power Line			
Overhead Product Line			
Septic Tank/Drain			

Client Representative _____ Date _____

IT Project Manager _____ Date _____

IT Field Supervisor _____ Date _____



**INTERNATIONAL
TECHNOLOGY
CORPORATION**

RESPIRATOR TRAINING COMPLETION FORM

FIT TEST PROTOCOL:

- ☐ Standard
☐ Other (specify) _____

FIT TEST CONDUCTED BY _____

LOCATION _____

DATE _____

Initial only the appropriate blocks

NAME _____ (Please print)	SCBA	AIRLINE PRESSURE DEMAND	AIR PURIFYING FULL FACE	AIR PURIFYING HALF MASK	PAPR	OTHER
	Brand: _____	Brand: _____	Brand: _____	Brand: _____	Brand: _____	Brand: _____
	Model: _____	Model: _____	Model: _____	Model: _____	Model: _____	Model: _____
	Size: S M L XL	Size: S M L XL	Size: S M L XL	Size: S M L XL	Size: S M L XL	Size: S M L XL
1. I understand why respiratory protection is needed and where and when it should be used.						
2. I know how to use this respirator properly.						
3. I know how to clean and inspect this respirator.						
4. I understand the limitations and restrictions of the respirators I will be using.						
5. I wore this respiratory equipment in normal air and checked the facepiece fit.						
6. I wore this respiratory equipment in a test atmosphere generated by smoke or other means.						
7. I understand that a good gas-tight face seal cannot be achieved with obstruction such as facial hair or glasses (with full face mask). I understand that corrective lens with frames compatible with the fullface mask (Smokespec) are available upon request by my manager.						



TAILGATE SAFETY MEETING

Division/Subsidiary _____ Facility _____

Date _____ Time _____ Job Number _____

Customer _____ Address: _____

Specific Location _____

Type of Work _____

Chemicals Used _____

Protective Clothing/Equipment _____

Chemical Name _____

Notes _____

Operating Area _____ Good for this date only _____ 19 _____

Specific vessel or equipment _____

Work to be done _____

TESTS

STATE EXACT LOCATION OF TEST	TIME	PERCENT LOWER EXPLOSION LIMIT	PERCENT OXYGEN	OTHERS	INITIAL

CHECK LIST

Operations/plant personnel have been informed of work to be performed _____

All tanks/lines/valves are disconnected, blinded, or locked out. _____

Equipment and all attached piping has been cleaned and purged with:
(Check blank) Water _____ Steam _____ Inert gas _____ Air _____

Electrical service has been locked out and tagged. _____

All grounding/bonding wire in place. _____

Surrounding equipment and operations are safe for hot work. _____

No open vessels or lines within 35 feet of hot work area. _____

No combustible items within 35 feet of hot work area or covered with wetted tarpaulins. _____

Fire Watch has been provided by Contractor. _____

No flammable gases greater than 10% LEL in hot work area. _____

All requirements of ITCPRO 9531 for Confined Space Entry have been met and ITC Form 9531-1 has been completed and posted. _____

If vessel contains leaded product, all requirements of ITCPRO 9531.3 have been met. _____

Initial

Yes Does Not Apply

PERSONNEL PROTECTIVE EQUIPMENT

EYES

- ☐ Chemical Goggles
- ☐ Face Shield
- ☐ Safety Glasses
- ☐ Welders Mask

BODY

- ☐ Environmental Suit: ☐ PVC ☐ Butyl
- ☐ Heavy Suit: ☐ PVC ☐ Neoprene
- ☐ Light PVC Suit
- ☐ Yellow Tyvek Suit
- ☐ White Tyvek Suit

EXTREMITIES

- ☐ Hard Hat
- ☐ Gloves
- ☐ Boots ☐ PVC ☐ Neoprene
- ☐ Hoods ☐ PVC ☐ Neoprene
- ☐ Foot Coverings, Disposable

RESPIRATORY

- ☐ Self-Contained Respirator
- ☐ Hose Line Respirator
- ☐ Hose Line W/Egress
- ☐ Cartridge Respirator

Cartridge Type _____

- ☐ Dust Respirator

EQUIPMENT REQUIRED

- ☐ Fire Extinguisher
- ☐ Fire Blanket
- ☐ Charged Water Hose
- ☐ Combustible Gas Indicator

Special Instructions: _____

Issued by: _____ Name Printed _____ Signature _____ Date _____

Manager

ATTACHMENT G
SUBCONTRACTOR CERTIFICATION

SUBCONTRACTOR CERTIFICATION

I, _____ as an agent of _____, do hereby certify that the following employees comply with the medical and training provisions of 29 CFR 1926.65. Individual copies of certification of successful completion of the required training and medical examination are attached for each employee.

Signature _____ Date _____

[illegible]

ATTACHMENT H

SAFETY CONCEPTS AND BASIC CONSIDERATIONS FOR UNEXPLODED ORDNANCE

U.S. Army Corps of Engineers, Huntsville Division
Safety Concepts and Basic Considerations
For Unexploded Ordnance Operations
Revision, December 16, 1992

Introduction

There is no "safe" procedure for dealing with unexploded ordnance (UXO), merely procedures which are considered least dangerous. However, maximum safety in any UXO operation can be achieved through adherence to applicable safety precautions, a planned approach, and intensive supervision. Only those personnel absolutely essential to the operation shall be allowed in the restricted area/exclusion zone during UXO activities (U.S. Department of Defense [DOD] 6055.9-STD). Safety must become a firmly established habit when working with UXO. Safety is the leading edge of quality.

1. General Safety Concerns

- a. Care must be observed in searching for, probing for, excavating, moving, and handling UXO. Operations on the UXO should be conducted only after the establishment of a complete plan for the operation involved and careful preparation to ensure its implementation. Plans shall be based upon the minimum number of essential personnel, for a minimum amount of time, to the minimum amount of UXO consistent with efficient operations and maximum safety.
- b. Only UXO qualified personnel shall be involved in UXO procedures. UXO procedures consist of gaining access (manual excavation) to subsurface UXO, identification, transportation, storage, and disposal of UXO. All personnel engaged in UXO operations shall be thoroughly trained in explosive safety and be capable of recognizing hazardous explosive exposures. Only personnel who have graduated from the U.S. Naval Explosive Ordnance Disposal (EOD) School, Indian Head, Maryland are authorized to handle UXO and perform UXO procedures. Hazardous Devices Technicians who have graduated from the Hazardous Devices School, Redstone Arsenal, Alabama are not trained nor qualified to handle military UXO and will not

be involved in UXO operations on a U.S. Army Corps of Engineers (USACE) project.

- c. The use of electric explosive devices (EED) susceptible to electromagnetic radiation (EMR) devices in the radio frequency (RF) range, that is radio, radar, and television transmitters, has become almost universal. RF EMR consists of waves of electrical energy at radio transmission frequencies. These waves are radiated in a line-of-sight from the antennas of electronic devices that transmit radio, radar, television, or other communication or navigation RF signals. The energy is usually equally radiated in all directions; however, certain types of antennas focus the energy, transmitting it in a single direction or sector only. EMR (RF) can also be reflected from large metallic surfaces or objects into areas not directly reached by the line-of-sight-radiated electric energy.
 - (1) Under highly undesirable conditions, enough of the energy may be picked up by portions of the EED, associated circuitry, or related objects acting as receiving antennas, to initiate the EED.
 - (2) Since the strength of the radiation decreases as the distance from the transmitter increases, the further away the ordnance item is, the less hazardous the situation. The energy can pass directly through materials that do not conduct electricity, such as wood or plastic. Therefore, using these materials as a barrier is of little value. The factors to be considered when evaluating the degree of hazard that the EMR (RF) energy represents are: 1) the strength of the field, that is its power; 2) the nature of the frequencies transmitted; 3) the distance from the transmitter antenna to the ordnance; and 4) the amount or type of protection available.
- d. Some ordnance is particularly susceptible to EMR (RF) emission. This susceptibility is usually caused by the design of the ordnance item or the type of EED that is used. HERO categories have been established under which ordnance is classified as safe, susceptible, and unsafe. A knowledge of ordnance that is normally unsafe in the presence of EMR (RF) is important so that preventive steps can be taken if the ordnance is encountered in a suspected EMR (RF) field.

- (1) In general, all ordnance items, even those normally safe when intact, are hazardous when extensively damaged. The damage may expose components, trailing wires, or breaks in shielding integrity that permit the entrance of EMR (RF) energy into the ordnance item and then into the EED.
- (2) The presence of antennas, communication, and radar devices should be a point of interest on initial site visits and preliminary assessments.
- (3) The site shall be surveyed for EMR RF transmitters and appropriate action taken. Minimum safe distances between mobile RF transmitters, television, and broadcasting transmitters and electric UXO demolition procedures are listed in Tables 2-3 and 2-4, Training Manual (TM) 9-1375-213-12.
- (4) Do not wear outer or undergarments made of wool, silk, or synthetic textiles such as rayon and nylon while working on UXO. These materials can generate sufficient static charge to ignite fuels or initiate explosives. Any person coming in contact with an UXO, shall ground himself prior to touching EEDs. This must be done to discharge any electrostatic charge accumulation from the body.

2. Site Characterization

- a. Make every effort to identify the UXO. Carefully examine the item for markings and other identifying features such as shape, size, and external fittings. However, do not move the item to inspect it. If an unknown UXO is encountered, photographs shall be taken and express-mailed to CEHND-ED-SY, which has access to the TM 60-Series publications.
- b. Foreign UXO were returned to the United States for exploitation and disposal. Records search should indicate the possibility of foreign UXO being on the site.
- c. If the records search indicates UXO containing military toxic chemical agents may be on the site, a decontamination plan shall be approved prior to entry onto the site. Any time a suspected chemical UXO is encountered, the 2-man concept is immediately implemented and notification shall be made through proper channels. The UXO shall be secured until the military arrives and assumes ownership.

- d. UXO which penetrates the earth to a depth where the force of the explosion is not enough to rupture the earth's surface forms an underground cavity called a camouflet. Camouflets will be filled with the end product of the explosion, carbon monoxide gas. Camouflet detection and precautions must be considered if records search indicates the site was used as an impact area.
- e. Avoid inhalation of, and skin contact with, smoke, fumes, and vapors of explosives and related hazardous materials.
- f. Consider UXO which has been exposed to fire and detonation as extremely hazardous. Chemical and physical changes may have occurred to the contents which render it much more sensitive than it was in its original state.
- g. Do not rely on the color coding of UXO for positive identification of contents. Munitions having none, incomplete, or improper color coding have been encountered.
- h. Avoid the area forward of the nose of a munition until it can be determined that the item is not a shaped charge and High Explosive Anti-Tank (HEAT) UXO. The explosive jet can be fatal to great distances forward of the longitudinal axis of the item. Assume any shaped charge munition to contain a piezoelectric (PZ) fuzing system until the fuzing is otherwise identified. A PZ fuze is extremely sensitive, can fire at the slightest physical change, and may remain hazardous for an indefinite period of time.
- i. Examine a projectile for the presence or absence of an unfired tracer.
- j. Approach an unfired rocket motor from the side. Ignition will create a missile hazard and hot exhaust.
 - (1) Do not expose electrically fired rocket motors within 25 feet of any exposed electronic transmitting equipment or exposed antenna leads.

- (2) If an unfired rocket motor must be transported, it shall be positioned in the direction which offers the least exposure to personnel in the event of the accidental ignition.
- k. Consider an emplaced landmine armed until proven otherwise. It may not be possible to tell, or it may be intentionally rigged to deceive.
 - (1) Many training mines contain firing indicator charges capable of inflicting serious injury.
 - (2) Exercise care with wooden mines that have been buried for a long time. Because of soil conditions, the wood deteriorates and the slightest inadvertent pressure on top may initiate the fuze.
- l. Assume a practice UXO contains a live charge until it can be determined otherwise. Expended pyrotechnic/practice devices may contain red/white phosphorus residue. Due to incomplete combustion, phosphorus may be present and reignite spontaneously if subjected to friction or if the crust is broken.
- m. Do not approach a smoking white phosphorus (WP) UXO. Burning up may detonate the burster or dispersal explosive charge at any time.
- n. The detection and identification of suspect explosive materials shall be accomplished _____ (IAW) Chapter 13, TM 9-1300-214, "Military Explosives."

3. *Ordnance Related Hazardous Toxic and Radiologic Waste Activities*

- a. 29 Code of Federal Regulations (CFR) 1926.100(a) requires personnel to wear protective helmets in areas where there is a possible danger of head injury from impact, or from falling or flying objects, or from electrical shock or burns. During field activities on ordnance projects, hard hats need not be worn unless a head injury threat is present.

- b. Soil samples, test pit excavation, and/or monitoring well installation are sometimes conducted in areas where subsurface UXO may be found. These intrusive activities must be preceded by a magnetometer survey to assure the safety of the sampling crews.
- c. Prior to the drilling rig coming on site, a magnetometer and a hand-held auger shall be utilized to assure the drilling spot is clear of subsurface UXO.
 - (1) After finding an area the magnetometer indicates is clear of detectable UXO, the hand-held auger should be used to start the drill hole. At not more than 2-foot depth, the hand-held auger shall be withdrawn and the magnetometer probe shall be lowered into the auger hole. This procedure will ensure small UXO items (20 millimeter [mm] projectiles and grenades), undetectable from the surface, are now detectable. This procedure shall be repeated until the maximum depth of the hand-held auger.
 - (2) Borehole monitoring shall continue at 2-foot intervals until virgin soil is encountered.

4. *Restricted Area/Exclusion Operations*

- a. Do not allow unauthorized or unnecessary personnel to be present in the vicinity of UXO. During the timeframe that UXO procedures are being accomplished, only necessary UXO personnel shall be within the restricted area/exclusion zone. When non-UXO personnel enter the restricted area/exclusion zone, all UXO procedures will cease. Limit personnel exposure time. UXO operations will always be based upon minimum exposure consistent with efficient operations.
 - (1) Plan for, provide, and know the measures to be taken in the event of an accident.
 - (2) Provide a designated emergency vehicle in the area in case of an accident or other emergency.

- (3) Coordination with the appropriate airspace representative shall be conducted and the appropriate notification procedures arranged.
- b. Before any movement of an UXO, the fuze condition must be ascertained. If the condition is questionable, consider the fuze armed. The fuze is considered the most hazardous component of an UXO, regardless of type or condition.
- (1) In general, the condition of a BD fuze in an unexploded projectile cannot be determined through examination of its external features. When there is evidence that the projectile has been fired, the BD fuze is considered to be in the armed condition.
 - (2) Arming wires and popout pins on unarmed fuzes should be secured by taping in place prior to movement.
 - (3) Perform any initial movement of an armed fuze remotely and avoid any unnecessary movement of an armed fuze.
- c. Personnel working with explosives and explosive ordnance shall comply with the following:
- (1) Do not carry fire or spark-producing devices on site.
 - (2) Do not smoke, except in authorized areas.
 - (3) Do not have fires for heating or cooking, except in authorized areas.
 - (4) Do not conduct operations without approved Standard Operating Procedures (SOP) and proper supervision.
 - (5) Do not become careless by reason of familiarity with ammunition.
 - (6) Do not conduct explosive operations during electrical, sand, dust, or snow storms.

- (7) Do not conduct explosive operations between sunset and dawn.
- d. When multiple search teams are operating on a site, the teams shall not work immediately adjacent to each other. A safe separation distance shall be established between each search team. This distance shall be based on the type of UXO expected to be encountered, but the distance shall never be less than 50 meters.
- e. Perform initial movement of an embedded projectile remotely. First movement of an embedded projectile may cause fuze functioning. During this remote operation, precautions shall be taken for a high-order detonation.
- (1) **DO NOT** dismantle, strip, or subject any UXO to unnecessary movement, except in response to a valid requirement.
- (2) Do not depress plungers, turn vanes, or rotate spindles, levers, setting rings, or other external fittings on the UXO. Such action may arm, actuate, or function the UXO.
- (3) Do not subject a mechanical time fuze to any unnecessary movement.
- (4) Do not unscrew a fuze from a fuze well that does not contain a fuze cavity liner. High explosives may be on the threads.
- f. Expended pyrotechnic/practice devices may contain red/white phosphorus residue. Due to incomplete combustion, red and white phosphorus may be present and reignite spontaneously if subjected to friction or if the crust is broken.
- g. Do not undertake the handling or disposal of liquid propellant fuels or oxidizers if not familiar with the characteristics of the material.
- h. Civil War projectiles shall be treated as any other UXO, especially projectiles with uncut Bormann time fuses and projectiles with percussion fuses, brass in particular. These have generally provided a watertight seal, even if they have been in the ground over one-hundred years. No projectile should be exposed to excess heat; the ignition

point of black powder, used as a bursting charge in all Civil War projectiles, is 457 degrees Fahrenheit (°F). Under no circumstances should an attempt be made to drill a hole in a projectile, either through the fuse or the body of the projectile.

- i. Extra care shall be taken when uncovering a buried UXO, if records search indicated WP munitions were fired or destroyed in the area. A buried WP munition may be damaged and when exposed to air, may start burning, and detonate. An ample supply of water and mud shall be immediately available if excavation reveals a WP UXO. Appropriate protective equipment (leather gloves, face shield, and flame-retardant clothing) and first aid shall also be immediately available.

5. Storage

- a. UXOs, UXO-components, packing materials, or empty boxes will not be stored in magazines containing explosives.
- b. A fire plan for the storage of explosives shall be prepared and coordination with the nearby fire department shall be conducted.

6. Excavation Operations

- a. The usual method for uncovering buried UXO is to excavate by hand. Hand excavation is the most reliable method for uncovering UXO, but unless the UXO is very near the surface, hand excavation exposes more people to the hazard of detonation for a longer period of time than any other method. Hand excavation will be accomplished only by UXO personnel.
- b. Earth moving machinery (EMM) may be used to excavate for buried UXO, if the UXO is estimated to be deeper than 12 inches. EMM shall not be used to excavate within 12 inches of an UXO. When excavation gets within 12 inches of an UXO, hand excavation shall be used to uncover the UXO. EMM may be operated by non-UXO personnel, under the direct supervision of UXO personnel.

- (1) If more than one EMM will be used on the same site, they will be separated by at least 100 meters during excavation.

- (2) During excavation operations, only those personnel absolutely necessary for the operation shall be within the restricted area/exclusion zone.
- (3) Excavation and trenching shall comply with the provisions of 29 CFR 1926, Subpart P.

7. Disposal Operations

- a. As a general rule, UXO will be detonated in place when the situation allows. All detonation-in-place should be conducted by electrical means to assure maximum control of the site, except in extreme sandy soil which creates a static electricity hazard. Nonelectrical means can be used when the situation dictates.
 - (1) Do not allow one person to work alone in disposal operations. At least one person shall be available near the disposal site to give warning and assist in rescue activities in the event of an accident. Only UXO qualified personnel shall be involved in on-site disposal operations.
 - (2) Initiating explosives include lead azide, mercury fulminate, lead styphnate, and tetracene. They manifest extreme sensitivity to friction, heat, and impact. When involved in a fire, they can be expected to detonate without burning. In storage, initiating explosives shall be kept wet with water or water/alcohol mixture. Every effort shall be made to prevent the liquid from freezing; frozen explosives material will not be handled. Lead azide shall not be allowed contact with copper, zinc, or alloys containing any concentration of such metals because of the likely formation of other azides that are more sensitive than the original lead azide. Likewise, mercury fulminate shall not be allowed contact with aluminum, magnesium, zinc, brass, or bronze.
 - (3) If loose, bulk explosives are to be disposed of by detonation, detonate only one kind of explosive in any one given shot.
 - (4) Exercise extreme care in handling and preparing high explosives for detonation. They are sensitive to detonation by heat, shock, and friction.

- (5) Keep initiating explosives in a water-wet condition at all times until ready for final preparation for detonation. The sensitivity of these explosives is greatly increased when dry.
 - (6) Do not pack a bomb fuze well with explosives unless it can be positively confirmed that the fuze well does not contain any fuze components.
 - (7) Photoflash bombs must be handled with the same care as black powder, and with even greater care than explosive-loaded bombs.
 - (8) Some practice bombs do not contain any positive safety features. Positively identify and review all safety precautions prior to handling practice bombs.
 - (9) WP UXO shall not be detonated into the ground. The UXO shall be countercharged on the bottom-center-line.
 - (10) Photoflash powder will react with moisture and generate hydrogen gas, and this reaction may generate sufficient heat or pressure to detonate the UXO. Do not look directly at photoflash UXO during detonation.
- b. When disposing of high explosives by detonation, do not approach the disposal site for at least 30 minutes in the event of a misfire.
- (1) Carry blasting caps in approved containers and keep them out of the direct rays of the sun.
 - (2) Do not handle, use, or remain near explosives during the approach or progress of an electrical storm. All persons should retire to place of safety.
 - (3) Do not use explosives or accessory equipment that are obviously deteriorated or damaged. They may detonate prematurely or fail completely.

- (4) Always point the explosive end of blasting caps, detonators, and explosive devices away from the body during handling. This will minimize injury should the item explode.
 - (5) Use only standard blasting caps of at least the equivalent of a commercial No. 8 blasting cap.
 - (6) Use electric blasting caps of the same manufacture, whenever possible, for each demolition shot involving more than one cap.
 - (7) Keep blasting caps in approved containers, located at least 25 feet from other explosives, until they are needed for priming.
 - (8) Do not bury blasting caps. Use detonating cord to position blasting caps above the ground. Buried blasting caps are subject to unobserved pressures and movement which could lead to premature firing or misfires.
 - (9) Test electric blasting caps for continuity at least 25 feet downwind from any explosives prior to connecting them to the firing circuit. Upon completion of testing, the lead wires will be short-circuited by twisting the bare ends of the wires together. The wires will remain shunted until ready to connect to the firing circuit.
- c. A post-search of the detonation site shall be conducted to assure a complete disposal was accomplished.
- d. If the situation dictates, protective measures to reduce shock, blast, and fragmentation damage shall be taken. Army TM 5-855-1, Fundamentals of Protective Design for Conventional Weapons and associated software program "CONWEP" contains data on blast effects, groundshock, cratering, ejecta, and fragmentation.
- (1) For nonfragmenting explosive materials, evacuation distance should be a minimum of 1,250 feet.

- (2) For fragmenting explosive materials, evacuation distance should be a minimum of 2,500 feet. For bombs and projectiles with caliber 5-inch or greater, use a minimum evacuation distance of 4,000 feet.
 - (3) Items with lugs and/or strongbacks and nose and/or tail plate sections should be oriented away from personnel locations.
- e. Consideration shall be given to tamping the UXO to control fragments, if the situation warrants. Fragments shall be minimized not only to protect personnel, but property such as buildings, trees, etc.
- f. Open burning of explosives and smokeless powder or chemical decomposition of explosives shall not be accomplished without prior approval of the Contracting Officer.
 - (1) Do not inhale the smoke or fumes of burning pyrotechnic or incendiary materials. The fumes and dust from many of these materials are irritating and/or toxic if inhaled.
 - (2) Do not use water on incendiary fires. Water may induce a violent reaction or be completely ineffective, depending on the mixture.
 - (3) Bury incendiary-loaded munitions in sand when transporting them. This will smother any fire which should start until other corrective action can be taken.
 - (4) Anticipate a high-order detonation when burning pyrotechnics or incendiary-loaded UXO. Safety measures for personnel and property must be based on this possibility.
- g. Inert UXO will not be disposed of or sold for scrap until the internal fillers have been exposed and unconfined. Heat generated during a reclamation operation can cause the inert filler, moisture, and air to expand and burst sealed casings. Venting or exposure may be accomplished in any way necessary to preclude rupture due to confined pressure.

8. *Transportation*

- a. If UXO must be transported off site for disposal, the provisions of 49 CFR 100-199, TM 9-1300-206, and state and local laws shall be followed.
- b. When transporting a possible armed fuze, position the fuze in the most neutral orientation possible.
- c. Do not transport a WP munition, unless it is immersed in water, mud, or wet sand.
- d. If loose pyrotechnic, tracer, flare, and similar mixtures are to be transported, they shall be placed in No. 10 mineral oil or equivalent to minimize fire and explosion hazard.
- e. If an unfired rocket motor must be transported, it shall be positioned in the direction which offers the least exposure to personnel in the event of an accident ignition.
- f. If base-ejection type projectiles must be transported to a disposal area or collection point, the base shall be oriented to the rear of the vehicle and the projectile secured, in the event the ejection charge functions in route.
- g. If an ordnance and explosive waste (OEW), with exposed hazardous filler (HE, etc), has to be moved to a disposal area, the item shall be placed in a heavy duty plastic bag to prevent migration of the hazardous filler. Padding should also be added to protect the exposed filler from heat, shock, and friction.

APPENDIX B

CONSTRUCTION QUALITY CONTROL PLAN ADDENDA

Final Plan

Contractor Quality Control Plan Addenda Combined Hazardous Waste Mine Casings and Debris Removal Sites 2 and 9 and Site Screening Area 4

Naval Weapons Station Yorktown Yorktown, Virginia

Contract No. N47408-92-D-3045
Delivery Order No. 0016

Prepared for:
Naval Construction Battalion Center
Naval Facilities Engineering Command
NAVFAC Contracts Office, Code 2723, Building 90
Port Hueneme, California 93043-5000



Prepared by:
IT Corporation
2790 Mosside Boulevard
Monroeville, Pennsylvania 15146-2792

1.0 TITLE AND SIGNATURE PAGE

TASK-SPECIFIC QUALITY ASSURANCE PLAN

Mine Casings and Debris Removal
Sites 2 and 9 and Site Screening Area 4
Naval Weapons Station
Yorktown, Virginia

Contract No. N47408-92-D-3045
Delivery Order No. 0016

Prepared to Meet NAVFAC Specification Number
05-93-3120; Section 01010; Clause 1.2.1
Submittal Description SD-18h

Reviewed and Approved By:

Raymond A. Lion Jr. 23 Sept 94
QA Manager, Construction and Remediation; IT Corporation Date

Thomas Shover 9/28/94
Project Manager, IT Corporation Date

I hereby certify that the (equipment) (material) (article) shown and marked in this submittal is that proposed to be incorporated into Delivery Order Number 0016, is in compliance with the Contract drawings and specifications, can be installed in the allocated spaces, and is submitted for Government approval.

Certified by William A. Montgomery Date 9/23/94

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6-1	Organization Chart Delivery Order 0016

5.0 TASK DESCRIPTION

The work to be performed under this Delivery Order consists of completing removal actions at three sites located at the Naval Weapons Station (NWS) in Yorktown, Virginia. The NWS is a 10,500 acre-facility located on the York-James Peninsula, between the York and James Rivers and is bounded by Naval Supply Center - Cheatham Annex to the northwest, Interstate 64 to the southwest, Route 238 to the southeast, and the York River to the northeast. The three locations where removal actions will occur include:

- Site 2 - Turkey Road Landfill
- Site 9 - Plant 1 Explosive Contaminated Wastewater Discharge Area
- Site Screening Area 4 (SSA4) - Weapons Casing/Drum Disposal Area.

The location and overall layout of the sites are presented in the construction drawings in the Removal Action Work Plan (IT, 1994). An Initial Assessment Study (IAS) of the sites was conducted in 1984 by C. C. Johnson and Associates Inc. and CH2M Hill (C. C. Johnson and CH2M Hill, 1984). Versar, Inc. also performed a groundwater investigation of the project area (Versar, 1991). Geophysical studies were performed in 1992 by Baker Environmental and Roy F. Weston, Inc. (Baker and Weston, 1992). The site wastes were characterized by IT Corporation (IT) in April 1994 (IT, 1994a). The following sections provide site descriptions based on these investigative studies and outline the removal actions proposed for each site.

5.1 Site Description and Background Information

A brief site description and background information are provided below for Sites 2 and 9 and SSA4.

Site 2 - Turkey Road Landfill. The Turkey Road Landfill, also known as Site 2, is a 5-acre landfill located east of Turkey Road in a marsh adjacent to the south branch of Felgates Creek. Operations at the landfill began in the 1940s and stopped during 1981. The landfill is encompassed by a wooded area ranging from approximately 50 to 300 feet in width, which is in turn bounded on three sides by streams (including Felgates Creek). It is within this wooded perimeter surrounding the landfill that IT concentrated the Site 2 investigation, as this area contains numerous UXO along with other wastes deposited on the surface. All materials

were subsequently characterized by IT in March 1994. Figure 1 of the Removal Action Work Plan presents a plan view of Site 2, along with surface waste locations and boundaries.

Site 9 - Plant 1 Explosives-Contaminated Wastewater Area. The Explosives-Contaminated Wastewater Area, commonly called Site 9, was used from the late 1930s to 1975 as a drainage way for Plant 1 explosives-contaminated washwaters and possibly substantial quantities of organic solvents. During site walks conducted on October 19, 1993 and December 20, 1993, IT personnel observed surface debris strewn about both embankments adjacent to Collman Road. All materials were subsequently characterized by IT in March 1994. Figure 2 of the Removal Action Work Plan presents a plan view of Site 9, along with surface waste locations and boundaries.

SSA4 - Weapons Casing/Drum Disposal Area. The Weapons Casing/Drum Disposal Area is located near the intersection of Bypass Road and Main Road. During the October and December site walks, various UXO and surface debris were found to be present. In addition, IT completed a preliminary magnetometer survey of the field adjacent to Bypass Road since an apparent ravine fill had taken place within the area. During the preliminary survey, IT determined that a large portion of the field did have buried metallic objects beneath the surface. All materials were subsequently characterized by IT in March 1994. Figure 3 of the Removal Action Work Plan presents a plan view of SSA4 along with surface waste locations and boundaries.

5.2 Site-Specific Removal Action

The removal actions to be performed at Sites 2 and 9 and SSA4 at NWS in Yorktown, Virginia are presented in the Removal Action Work Plan (IT, 1994). The scope of work for the removal actions consists of the following work components:

- Preliminary activities
- Mobilization
- Site setup
- Site preparation
- Waste removal operations
- Waste transportation and disposal
- Site restoration
- Close-out report preparation and submittal.

Several of the work components consist of various activities which are detailed in the following.

Preliminary Activities. Several preliminary activities must occur prior to mobilization for efficient and effective removal action performance. These activities are required to satisfy contractual requirements and provide the necessary information to plan the removal actions and facilitate their completion once they have been initiated. The initial tasks will include:

- Holding a preconstruction conference to discuss and develop a mutual understanding with government representatives concerning scheduling and administering the work
- Conducting site walks to acquaint project personnel with the sites and identify pertinent features of each site
- Preparing preconstruction submittals for review and approval by the CO and to be used as guidance documents during performance of the removal actions
- Procuring subcontractors, materials, equipment, etc., as necessary to perform the removal actions
- Performing a borrow study in which prospective materials required for site restoration will be sampled and tested/analyzed at the approved geotechnical and analytical laboratories
- Obtaining applicable permits for uninterrupted performance of the removal actions.

Site Setup. The primary purpose of site setup is to establish the field facilities necessary to accomplish the removal actions. Site setup activities will include:

- Conducting an initial site survey at each site
- Performing clearing and grubbing operations to perform the removal actions at each site
- Establishing field office facilities
- Delineating and constructing the construction site entrance and site access roads at each site
- Identifying and designating the temporary laydown areas as well as specific locations for storage/stockpiling of construction equipment and materials at each site

- Erecting a perimeter security fence around the designated work areas at each site
- Identifying and designating the contamination control zones at each site, as required
- Establishing a personnel decontamination facility at each site
- Constructing an equipment decontamination pad, drum handling area, and roll-off container storage areas at the sites, as appropriate
- Performing an inventory and inspection of equipment and materials; in particular, health and safety related items, to verify IT is prepared to perform the removal actions.

Site Preparation. The primary purpose of site preparation is to prepare the site for the required remedial actions. Site preparation will include:

- Conducting a field subsurface survey to verify and field reference the location and elevation of existing utilities, and any other type of underground obstruction within the designated work areas
- Protecting all site features from damage which may occur during performance of the removal actions
- Installing erosion and sedimentation controls consisting of silt fence around the perimeter of the site and downgradient of work areas.

The detailed construction procedures and specifications for the removal actions are provided in the Removal Action Work Plan (IT, 1994). The removal actions will be performed in accordance with the NAVFAC Specification No. 05-93-3120, Mine Casings and Debris Removal, as presented in the Removal Action Work Plan (IT, 1994).

5.3 Contractor Quality Control Activities

The Contractor Quality Control (CQC) activities have been provided in accordance with the contract and delivery order requirements. The primary emphasis of CQC for the removal actions at NWS is to provide monitoring and control of every construction/remediation activity. The CQC activities include a systematic construction inspection and verification process and record preparation and management. A CQC task team will include members from the Navy, IT, and subcontractors, as required.

At least 5 days after this TQAP is submitted, but before removal action operations begin, the CQC task team will meet to discuss the CQC system. The purpose of the meeting will be to develop a mutual understanding relative to the details of the system, including forms to be used for recording the quality control operations, inspections, tests, approvals, certifications, administration of the system, and Government surveillance. The meeting will also develop a schedule for future weekly or biweekly CQC meetings and will establish procedures for submission of daily reports and other records and documents. The QC Representative will document all CQC meetings by delivering copies of the minutes to the Navy within 3 calendar days after the meetings.

Detailed CQC activities are described in Section 6.0 through Section 11.0 of this plan.

6.0 TASK ORGANIZATION AND RESPONSIBILITY

6.1 IT Personnel Roster

A roster of IT personnel working under this Delivery Order is provided in Table 6-1. Some of the personnel listed may not appear on the organization chart for the site as they are primarily providing ancillary support functions and are not considered primary personnel for the delivery order. Additionally, the names of personnel providing field labor are not listed as these individuals have not been identified at this time. These personnel will be provided from a pool of trained field technicians from IT's Monroeville, Pennsylvania office and other IT facilities. The organization chart for this Delivery Order is presented in Figure 6-1. Only primary IT personnel are presented. The QC Representative will be appointed by a Letter of Appointment (Appendix A). A signed final version of this letter will be provided along with the QC Representative's resume for approval by the Navy's Contracting Officer.

6.2 Subcontractor Listing

IT's procurement process for all subcontractors is ongoing at this time. Some of the subcontractors have been listed in Table 6-2. When the procurement process is complete and the subcontractors have been approved by the Navy's Contracting Officer, IT will update the organization chart and the subcontractor listing accordingly.

6.3 Personnel Authorization Matrix

The personnel authorization matrix for the Contract Data Requirement List is presented in Table 6-3. This matrix is provided to present the personnel authorized to provide approval for submittals and their respective qualifications. The personnel matrix shows a description of each submittal, registration or certification required, if applicable, and who is the authorized submittal reviewer and their position.

TABLE 6-1
IT CORPORATION PERSONNEL ROSTER
MINE CASINGS AND DEBRIS REMOVAL
SITES 2 AND 9 AND SSA4 - NAVAL WEAPONS STATION
YORKTOWN, VIRGINIA

NAME	POSITION
E. ZORATTO	PROGRAM DIRECTOR
J. POLLARD	PROGRAM MANAGER
S. HYTLA	CONTRACT ADMINISTRATOR
H. DRAVECKY	PROJECT MANAGER
R. LION	QA MANAGER
W. HOUSEMAN	CERTIFIED INDUSTRIAL HYGIENIST
D. BORKOVICH	PROCUREMENT MANAGER
D. WAGGONER	SUBCONTRACTS ADMINISTRATOR
J. DOYLE	HOME OFFICE PROJECT ADMINISTRATOR
R. OBLAK	COST/SCHEDULE ENGINEER
W. MONTGOMERY	PROJECT ENGINEER
B. BALLACK	QC REPRESENTATIVE
D. RUSSELL	SITE SUPERINTENDENT
F. VISH	SITE SAFETY AND HEALTH COORDINATOR

TABLE 6-2
SUBCONTRACTOR LISTING
MINE CASINGS AND DEBRIS REMOVAL
SITES 2 AND 9 AND SSA4 - NAVAL WEAPONS STATION
YORKTOWN, VIRGINIA

ACTIVITY	COMPANY NAME, ADDRESS, AND PHONE NUMBER
Analytical Laboratories	<p>Quanterra Inc. (formerly IT Analytical Services)</p> <p><u>Chemical Analysis</u></p> <ul style="list-style-type: none"> • Export Laboratory (Host Laboratory) 5103 Old William Penn Hwy. Export, PA 15632 (412) 731-8806 • Middlebrook Laboratory 5815 Middlebrook Pike Knoxville, TN 37921 (615) 588-6401 <p><u>Geotechnical Analysis</u></p> <ul style="list-style-type: none"> • Oak Ridge Laboratory 1570 Bear Creek Road Oak Ridge, TN 37830 (615) 482-6497
Compaction	To Be Determined
Land Surveying	To Be Determined
Hydroseeding	To Be Determined
Waste Transportation and Disposal	<ul style="list-style-type: none"> • Nonhazardous <ul style="list-style-type: none"> - Transportation: To Be Determined - Disposal: To Be Determined • Hazardous <ul style="list-style-type: none"> - Transportation: To Be Determined - Disposal: To Be Determined

TABLE 6-3
CONTRACT DATA REQUIREMENT LIST (CDRL)
MINE CASINGS AND DEBRIS REMOVAL
SITES 2 AND 9 AND SSA4 - NAVAL WEAPONS STATION
YORKTOWN, VIRGINIA

CDRL No.	Description	Date Required	Frequency	Registration/ Certification Required	Position of Employee	Employee Authorized
A001	Submittal Status Log	10 days after DO award	Monthly	None required	QA Manager	R. Lion
A002	CQC Plan Addenda	10 days after DO award	One time	None required	QA Manager	R. Lion
A003	Testing Laboratory Qualifications	15 days after DO award	One time	None required	Project Manager	H. Dravecky
A004	Site Health and Safety Plan	10 days after DO award	One time	Certified Industrial Hygienist	Health & Safety Manager	W. Houseman
A005	Environmental Protection Plan	20 days after DO award	One time	None required	Project Manager	H. Dravecky
A007	As-Built Record Drawings	Prior to DO completion	One time	Professional Engineer	Project Manager	H. Dravecky
A008	As-Built Record of Materials	Prior to DO completion	One time	Professional Engineer	Project Manager	H. Dravecky
A009	NAS Diagram	15 days after DO award	One time	None required	Project Manager	H. Dravecky
A010	MIS Status Reports	30 days after DO award	Monthly	None required	Project Manager	H. Dravecky
A011	CQC Meeting Minutes	3 days after each meeting	Weekly	None required	QC Representative	B. Ballack
A012	Non-Compliance Check-off List	30 days after mobilization	Monthly	None required	QC Representative	B. Ballack
A013	Test Results Summary Reports	After first test	Monthly	None required	Project Manager	H. Dravecky
A014	Daily Reports to Inspector	Start of construction	Daily	None required	QC Representative	B. Ballack
A015	CQC Reports	Start of construction	Daily	None required	QC Representative	B. Ballack
A016	Contractor Closeout Report	30 days after demobilization	Draft/Final	Professional Engineer	Project Manager	H. Dravecky
A017	Permits	20 days after DO award	As needed	None required	Site Superintendent	To be determined
A018	Not Used	—	—	—	—	—

TABLE 6-3
(Continued)

CDRL No.	Description	Date Required	Frequency	Registration/ Certification Required	Position of Employee	Employee Authorized
A019	Catalog Data-Dust Suppressors	20 days after DO award	As needed	None required	QC Representative	B. Ballack
A020	Seed, Fertilizer, Limestone, Mulch	10 days prior to use	One time	None required	QC Representative	B. Ballack
A021	Certification of Clean Material	10 days prior to use	One/source	None required	QC Representative	B. Ballack
A022	Contamination Confirmatory Sampling Results	So as not to delay work	As needed	None required	Project Manager	H. Dravecky
A023	Certification of Permitted Disposal Facility	7 days prior to excavation	One/facility	None required	Project Manager	H. Dravecky
A024	Waste Shipment Documentation	Within 24 hours of removal from site	One/load	None required	QC Representative	B. Ballack
A025	Certificate of Waste Acceptance	Within 7 days of shipment	One/facility	None required	QC Representative	B. Ballack
A026	Certification of Vehicle Decontamination at Disposal Site	Within 7 days of disposal	One/vehicle	None required	Site S&H Coordinator	F. Vish
A027	Certification of Vehicle Decontamination at Work Site	Within 24 hours after removal from site	One/vehicle	None required	Site S&H Coordinator	F. Vish

IT Corporation

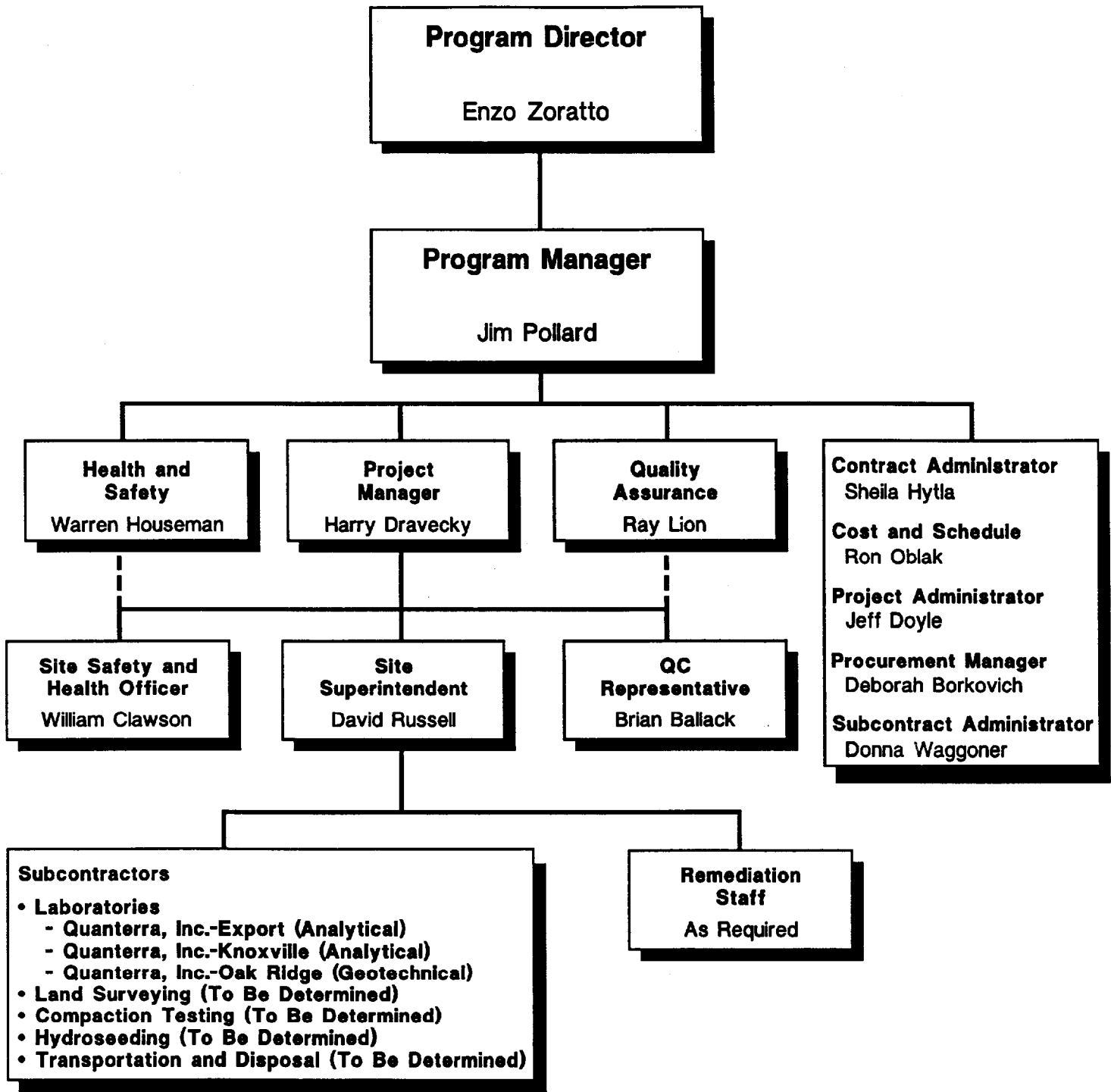


Figure 6-1
Organization Chart for Delivery Order 0016
Mine Casings and Drum Removal
Sites 2 and 9 and Site Screening Area 4
Naval Weapon Station
Yorktown, Virginia

7.0 CHEMICAL TESTING AND QUALITY CONTROL

Quality requirements for chemical testing were determined using the process defined in Section 9.0 of the CQC Plan which is based on the current Naval Energy and Environmental Support Activity (NEESA) guidance document for Data Quality Objectives (DQO) development, NEESA 20.2-47B "Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program" (NEESA, 1988).

7.1 Data Quality Objectives

During the review of the removal actions at Sites 2 and 9 and SSA4 and as part of the DQO process, several chemical DQOs were developed for specific activities. Table 7-1 presents each of the activities identified during the review as well as the data use and required quality level. Information detailing the sampling and analysis program for these activities has also been included in Table 7-1. The technical sampling approach (i.e., frequency), sample matrix, sample type, analytical/testing parameters, and analytical/testing methods are included for each activity.

7.1.1 Analytical/Testing Methods

As stated in the previous section, the analytical/testing program for the samples of soil, water, waste, and other material collected during various removal action activities is outlined in Table 7-1. The specified analytical/testing parameters and associated methods are included for each activity. The quantitation limits for the analytical parameters are presented in Table 7-2. The actual limits will depend on the sample matrix and will be reported as defined for the specific samples. The control limits for the applicable analytical parameter are listed in Table 7-3.

7.1.2 Quality Assurance Objectives

The quality assurance objectives of this project are to develop and implement procedures to provide data of known and appropriate quality. Data quality is assessed by accuracy, precision, and completeness. Definitions of these parameters, the applicable procedures, and level of effort are described below.

Samples will be collected and analyzed in accordance with NEESA Quality Levels C and D. The field and laboratory QC requirements for Levels C and D are specified in "Sampling and

TABLE 7-1
DATA QUALITY OBJECTIVES/SAMPLING AND ANALYSIS PROGRAM
MINE CASINGS AND DEBRIS REMOVAL
SITES 2 AND 9 AND SSA4 - NAVAL WEAPONS STATION
YORKTOWN, VIRGINIA

Activity	Data Use	Sample Frequency	Matrix	Sample Type	Parameter and Analytical Method	Quality Level
Borrow material evaluation for Sites 2 and 9 and SSA4	To determine if soil backfill and topsoil is suitable for use	One sample/material/borrow source	Soil	Discrete	Sieve Analysis (ASTM C136) Moisture Density (ASTM D698) Material Finer than 200 Sieve (ASTM D1140) Soil Classification (ASTM D2487) Liquid Limit, Plastic Limit and Plasticity Index (ASTM D4318) Also, parameters listed below:	Level C
Disposal requirements for Sites 2 and 9 and SSA4	To determine disposal requirements for dewatering/decon water	One sample from temporary storage tank	Water	Composite	Ignitability Chapter 7 of SW846 ^a Corrosivity Chapter 7 of SW846 Reactivity Chapter 7 of SW846 TCLP 1311 - Volatile organics 8240 - Semivolatile organics 8270 - Herbicides 8150 - Pesticides 8080 - Metals 6010/1470 TPH 418.1 PCB 8080 TOC 9060	Level C
	To determine disposal requirements for sediment fence deposits	One sample from rolloff bin	Soil	Composite		
	To determine disposal requirements for uncharacterized material	One sample from each site	Bulk material	Discrete		
Surface/subsurface characterization for Sites 2 and 9 and SSA4	To determine soil contamination after removal actions completed		Soil	Discrete	TCL Organics CLP-SOW OLMO 1.8 ^b - Volatiles - Semivolatiles - Pesticides/PCBs TAL Inorganics CLP-SOW ILMO 2.1 ^b	Level D
					Nitroexplosives 8380	Level C

^aTest Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA SW846 3rd Revised Edition, November 1986.

^bContract Laboratory Program Statement of Work for Organic Analysis OLMO 1.8 and Inorganic Analysis ILMO 2.1.

TABLE 7-2
QUANTITATION LIMITS
MINE CASINGS AND DEBRIS REMOVAL
SITES 2 AND 9 AND SSA4 - NAVAL WEAPONS STATION
YORKTOWN, VIRGINIA

Analytical Parameter	CAS Number	Quantitation Limits	
		Water (mg/L)	Soil/Sediment (mg/kg)
Volatiles			
1. Chloromethane	74-87-3	0.01	0.01
2. Bromethane	74-83-9	0.01	0.01
3. Vinyl Chloride	75-01-4	0.01	0.01
4. Chloroethane	75-00-3	0.01	0.01
5. Methylene Chloride	75-09-2	0.005	0.005
6. Acetone	67-64-1	0.01	0.01
7. Carbon Disulfide	75-15-0	0.005	0.005
8. 1,1-Dichloroethene	75-35-4	0.005	0.005
9. 1,1-Dichloroethane	75-34-3	0.005	0.005
10. 1,2-Dichloroethane (total)	540-59-0	0.005	0.005
11. Chloroform	67-66-3	0.005	0.005
12. 1,2-Dichloroethane	107-06-02	0.005	0.005
13. 2-Butanone	78-93-3	0.01	0.01
14. 1,1,1-Trichloroethane	71-55-6	0.005	0.005
15. Carbon Tetrachloride	56-23-5	0.005	0.005
16. Vinyl Acetate	108-05-4	0.01	0.01
17. Bromodichloromethane	75-27-4	0.005	0.005
18. 1,2-Dichloropropane	78-87-5	0.005	0.005
19. cis-1,3-Dichloropropene	10061-01-5	0.005	0.005
20. Trichloroethene	79-01-6	0.005	0.005
21. Dibromochloromethane	124-48-1	0.005	0.005
22. 1,1,2-Trichloroethane	79-00-5	0.005	0.005
23. Benzene	71-43-2	0.0005	0.005
24. trans-1,3-Dichloropropene	10061-02-6	0.005	0.005
26. 4-Methyl-2-pentanone	108-10-1	0.01	0.01
27. 2-Hexanone	591-78-6	0.01	0.01
28. Tetrachloroethene	127-18-4	0.005	0.005
29. Toluene	108-88-3	0.0005	0.005
30. 1,1,2,2-Tetrachloroethane	79-34-5	0.005	0.005
31. Chlorobenzene	108-90-7	0.005	0.005
32. Ethyl Benzene	100-41-4	0.0005	0.005
33. Styrene	100-42-5	0.005	0.005
34. Xylenes (total)	1330-20-7	0.0005	0.005

TABLE 7-2
(continued)

Analytical Parameter	CAS Number	Quantitation Limits	
		Water (mg/L)	Soil/Sediment (mg/kg)
Semivolatiles			
35. Phenol	108-95-2	0.01	0.33
36. bis (2-Chloroethyl) ether	111-44-4	0.01	0.33
37. 2-Chlorophenol	95-57-8	0.01	0.33
38. 1,3-Dichlorobenzene	541-73-1	0.01	0.33
39. 1,4-Dichlorobenzene	106-46-7	0.01	0.33
40. Benzyl alcohol	100-51-6	0.01	0.33
41. 1,2-Dichlorobenzene	95-50-1	0.01	0.33
42. 2-Methylphenol	95-48-7	0.01	0.33
43. bis(2-Chloroisopropyl) ether	108-60-1	0.01	0.33
44. 4-Methylphenol	106-44-5	0.01	0.33
45. N-Nitroso-di-n-dipropylamine	621-64-7	0.01	0.33
46. Hexachloroethane	67-72-1	0.01	0.33
47. Nitrobenzene	98-95-3	0.01	0.33
48. Isophorone	78-59-1	0.01	0.33
49. 2-Nitrophenol	88-75-5	0.01	0.33
50. 2,4-Dimethylphenol	105-67-9	0.01	0.33
51. Benzoic acid	65-85-0	0.05	1.6
52. bis(2-Chloroethoxy) methane			
53. 2,4-Dichlorophenol	111-91-1	0.01	0.33
54. 1,2,4-Trichlorobenzene	120-83-2	0.01	0.33
	120-82-1	0.01	0.33
55. Naphthalene	91-20-3	0.01	0.33
56. 4-Chloroaniline	106-47-8	0.01	0.33
57. Hexachlorobutadiene	87-68-3	0.01	0.33
58. 4-Chloro-3-methylphenol (para-chloro-meta-cresol)	59-50-7	0.01	0.33
59. 2-Methylnaphthalene	91-47-6	0.01	0.33
60. Benzo(s)anthracene	56-55-3	0.01	0.33
61. Chrysene	218-01-9	0.01	0.33
92. bis(2-Ethylhexyl)phthalate	117-81-7	0.01	0.33
93. Di-n-octylphthalate	117-84-0	0.01	0.33
94. Benzo(b)fluoranthene	205-99-2	0.01	0.33
95. Benzo(k) fluoranthene	207-08-9	0.01	0.33
96. Benzo(a)pyrene	50-32-8	0.01	0.33
97. Indeno(1,2,3-cd)pyrene	193-39-5	0.01	0.33
98. Dibenz(a,h)anthracene	53-70-3	0.01	0.33
99. Benzo(g,h,i)perylene	191-24-2	0.01	0.33

TABLE 7-2
(continued)

Analytical Parameter	CAS Number	Quantitation Limits	
		Water (mg/L)	Soil/Sediment (mg/kg)
Pesticides/PCBs			
100. alpha-BHC	319-84-6	0.00005	0.008
101. beta-BHC	319-85-7	0.00005	0.008
102. delta-BHC	319-86-8	0.00005	0.008
103. gamma-BHC (lindane)	58-89-9	0.00005	0.008
104. Heptachlor	76-44-8	0.00005	0.008
105. Aldrin	309-00-2	0.00005	0.008
106. Heptachlor epoxide	1024-57-3	0.00005	0.008
107. Endosulfan I	959-98-8	0.00005	0.008
108. Dieldrin	60-57-1	0.00001	0.016
109. 4,4'-DDE	72-55-9	0.00001	0.016
110. Endrin	72-20-8	0.00001	0.016
111. Endosulfan II	33213-65-9	0.00001	0.016
112. 4,4'-DDD	72-54-8	0.00001	0.016
113. Endosulfan sulfate	1031-07-8	0.00001	0.016
114. 4,4'-DDT	50-29-3	0.00001	0.016
115. Methoxychlor	72-43-5	0.00005	0.08
116. Endrin ketone	53494-70-5	0.00001	0.016
117. alpha-chloradane	5103-71-9	0.00005	0.08
118. gamma-chlordane	5103-74-2	0.00005	0.08
119. Toxaphene	8001-35-2	0.001	0.016
120. Aroclor-1016	126774-11-2	0.00005	0.08
121. Aroclor-1221	11104-28-2	0.00005	0.08
122. Aroclor-1232	11141-16-5	0.00005	0.08
123. Aroclor-1242	53469-21-9	0.00005	0.08
123. Aroclor-1248	12672-29-6	0.00005	0.08
125. Aroclor-1254	11097-69-1	0.001	0.160
126. Aroclor-1260	11096-82-5	0.001	0.160

Analytical Parameter	Method Number	Quantitation Limits	
		Water (mg/L)	Low/Soil/Sediment (mg/kg)
Nitroexplosives (EPA Method 8330)			
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	8330	0.013	0.0022
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	8330	0.014	0.001
1,3,5-trinitrobenzene (TNB)	8330	0.0073	0.00025
1,3-dinitrobenzene (DNB)	8330	0.004	0.00025
methyl-2,4,6-trinitro-phenylnitramine (tetryl)	8330	0.044	0.00065
nitrobenzene (NB)	8330	NA	0.00026
2,4,6 trinitrotoluene (TNT)	8330	0.0069	0.00025
2,4-dinitrotoluene (24DNT)	8330	0.0057	0.00025
2,6-dinitrotoluene (26DNT)	8330	0.0094	0.00026
o-nitrotoluene (2NT)	8330	0.012	0.00025
m-nitrotoluene (3NT)	8330	0.0079	0.00025
p-nitrotoluene (4NT)	8330	0.0085	0.00025

TABLE 7-2
(continued)

Analytical Parameter	Method Number	Quantitation Limits	
		Water (mg/L)	Soil/Sediment (mg/kg)
Metals			
Arsenic	7060	0.005	0.5
Aluminum	6010	0.200	20
Antimony	6010	0.06	6
Barium	6010	0.100	20
Beryllium	6010	0.005	1
Cadmium	6010	0.005	1
Calcium	6010	5.0	1,000
Chromium (total)	6010	0.01	2
Cobalt	6010	0.05	10
Copper	6010	0.025	5
Cyanide	9010	0.02	10
Iron	6010	0.100	20
Lead (total)	7421	0.003	0.6
Magnesium	6010	5.0	1,000
Manganese	6010	0.015	3
Mercury	6010	0.001	0.1
Nickel	6010	0.040	8
Potassium	6010	5.0	1,000
Selenium	7740	0.005	0.5
Silver	6010	0.01	2
Sodium	6010	5.0	1,000
Thallium	7841	0.01	2
Selenium	6010	0.10	20
Thallium (total)	6010	0.10	20
Vanadium	6010	0.05	10
Zinc	6010	0.02	4
Miscellaneous			
TOC	906	1	10
TPH	418.1	0.2	17

TABLE 7-3
CONTROL LIMITS
MINE CASINGS AND DEBRIS REMOVAL
SITES 2 AND 9 AND SSA4 - NAVAL WEAPONS STATION
YORKTOWN, VIRGINIA

Analytical Parameters	EPA Method Number	Matrix Spike/Matrix Spike Duplicate or Surrogate Accuracy Criteria (% Recovery)		Blank Spike Accuracy Criteria (% Recovery)		Precision Criteria (Maximum Percent Difference)		Completeness (%)
		Soil	Water	Soil	Water	Soil	Water	
Volatile Organics	TCL							90
Benzene		66-142	76-127	70-115	70-120	21	11	
Chlorobenzene		60-133	75-130	70-125	70-130	21	13	
1,1-Dichloroethene		59-172	61-145	70-125	70-130	22	14	
Toluene		59-139	76-125	80-115	70-115	21	13	
Trichloroethene		62-137	71-120	75-125	70-115	24	14	
<u>Surrogates</u>								
Bromofluorobenzene		75-110	86-109	75-110	86-109	NA	NA	
1,2-Dichloroethane		85-108	86-103	85-108	86-103	NA	NA	
Toluene-d8		89-116	93-106	89-116	93-106	NA	NA	
Semivolatile Organics	TCL							90
Acenaphthene		37-137	46-118	55-110	50-110	19	31	
4-Chloro-3 methylphenol		26-103	23-97	55-100	40-95	33	42	
2-Chlorophenol		25-102	27-123	45-105	50-105	50	40	
1,4-Dichlorobenzene		28-104	36-97	50-110	50-120	27	28	
2,4-Dinitrotulene		28-89	24-96	55-120	40-100	47	38	
4-Nitrophenol		11-114	10-80	50-115	50-110	50	50	
N-Nitroso-Di-N-Propylamine		41-126	41-116	50-110	50-110	38	38	
Pentachlorophenol		17-109	9-103	50-120	30-95	47	50	
Phenol		26-90	12-110	40-115	55-120	35	42	
Pyrene		35-142	26-127	50-120	50-110	36	31	
1,2,4-Trichlorobenzene		38-107	39-98	50-110	50-110	23	28	
<u>Surrogates</u>								
Nitrobenzene-d5		23-120	35-114	65-120	65-120	NA	NA	
2-Fluorobiphenyl		30-115	43-116	70-120	55-110	NA	NA	
p-Terphenyl-d14		18-137	33-141	65-120	70-120	NA	NA	
Phenol-d6		24-113	10-94	65-120	65-115	NA	NA	
2-Fluorophenol		25-121	21-100	65-120	65-125	NA	NA	

TABLE 7-3
(continued)

Analytical Parameters	EPA Method Number	Matrix Spike/Matrix Spike Duplicate or Surrogate Accuracy Criteria (% Recovery)		Blank Spike Accuracy Criteria (% Recovery)		Precision Criteria (Maximum Percent Difference)		Completeness (%)
		Soil	Water	Soil	Water	Soil	Water	
<u>Surrogates</u> (Continued)								
2,4,6-Br ₃ -phenol		19-122	10-123	70-125	70-125	NA	NA	
Metals								90
Antimony	6010	75-125	75-125	45-183	--	35	35	
Arsenic	7060	75-125	75-125	66-125	--	35	35	
Barium	6010	75-125	75-125	84-111	--	35	35	
Beryllium	6010	75-125	75-125	85-115	--	35	35	
Cadmium	6010	75-125	75-125	91-127	--	35	35	
Chromium (total)	6010	75-125	75-125	75-108	--	35	35	
Cobalt	6010	75-125	75-125	86-115	--	35	35	
Copper	6010	75-125	75-125	81-117	--	35	35	
Lead (total)	7421, 6010	75-125	75-125	68-127	--	35	35	
Mercury	7470	75-125	75-125	82-121	--	35	35	
Molybdenum	6010	75-125	75-125	95-130	--	35	35	
Nickel	6010	75-125	75-125	86-115	--	35	35	
Silver	6010	75-125	75-125	91-132	--	35	35	
Selenium	7740	75-125	75-125	56-121	--	35	35	
Thallium	7841	75-125	75-125	68-104	--	35	35	
Vanadium	6010	75-125	75-125	69-119	--	35	35	
Zinc	6010	75-125	75-125	93-141	--	35	35	
Pesticide/PCBs	TCL							90
Dieldrin		31-134	52-126	65-130	70-130	38	18	
Endrin		41-139	56-121	60-140	70-140	45	21	
Heptachlor		35-130	40-131	60-130	50-120	31	20	
g-BHC		46-127	56-123	50-110	60-110	50	15	
Aldrin		34-132	40-120	60-125	60-120	43	22	
4,4-DDT		23-134	38-127	60-120	60-120	50	27	
<u>Surrogate</u>								
Dibutylchlorodate		20-150	24-154	20-150	24-154	NA	NA	
Miscellaneous								90
Nitroexplosives	8330	70-130	70-130	--	--	25	--	
TPH	418.1	50-150	50-150	--	--	30	--	
TOC	9060	75-125	75-125	--	--	20	--	

Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program" (NEESA 20.2-047B, 1988). This CQC Plan Addenda defines the precision, accuracy, and completeness requirements and specifies the field QC program. Level C was selected because EPA methods can be used to characterize the waste constituents. The laboratory will prepare a Level C data package which involves less detail than the Contract Laboratory Program (CLP) package because no raw data are included.

The applicable QC procedures, quantitative target limits, and levels of effort for assessing data quality are dictated by the intended usage of the data and the nature of analytical methods. For this project, parameter analyses focus on waste characterization to identify the concentrations of waste constituents. Specific data quality objectives for accuracy, precision, and completeness are detailed in Table 7-3. A summary of laboratory internal QC is presented in Table 7-4.

Accuracy of chemical test results will be assessed by spiking samples with known standards and establishing the average recovery. Two types of recoveries will be measured: matrix spike recoveries and surrogate spike recoveries. For a matrix spike, known amounts of standard compounds identical to the compounds present in the sample of interest are added to a separate aliquot of the sample. For a surrogate spike, the standards are chemically similar but not identical to the compounds in the fraction being analyzed. The purpose of the surrogate spike is to provide QC on every sample by constantly monitoring for unusual matrix effects and gross sample processing errors. Other laboratory QC samples used to assess accuracy include laboratory control samples (i.e., blank spikes), internal standards, check standards, and laboratory blanks. Field QC samples used to assess accuracy will include trip blanks, field blanks, and equipment rinsate blanks. Accuracy measurements will be carried out at a minimum frequency of 1 in 20 or 1 per set. Target quantitative accuracy objectives are listed as applicable in Table 7-3. A quantitative definition of completeness is given in Section 8.0.

Precision of the data is a measure of the spread of the data when more than one measurement is taken on the same sample. For duplicate measurements, precision can be expressed as the relative percent difference. Laboratory duplicates and field duplicates will be used to assess precision. A quantitative definition of the relative percent difference is given in Section 8.0.

TABLE 7-4
SUMMARY OF INTERNAL QUALITY CONTROL
MINE CASINGS AND DEBRIS REMOVAL
SITES 2 AND 9 AND SSA4 - NAVAL WEAPONS STATION
YORKTOWN, VIRGINIA

Parameter	Method	Duplicate	Spike	Matrix Spike	Matrix Spike Duplicate	Fortified Blank or Check Sample	Prep Blank	Analytical Spikes or MSA	Internal Standard	Surrogate	Zero and Span Gas	External QC Sample	Other
• TCLP	1311	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	TCLP Spike (1 per Matrix)
- Volatile Organics	8240	NA	NA	1:20	1:20	NA	1:20	NA	Yes	Yes	NA	NA	NA
- Semivolatile Organics	8270	NA	NA	1:20	1:20	NA	1:20	NA	Yes	Yes	NA	NA	NA
- Herbicides	8150	NA	NA	1:20	1:20	NA	1:20	NA	External	NA	NA	NA	NA
- Pesticides	8080	NA	NA	1:20	1:20	1:20	1:20	NA	External	Yes	NA	NA	NA
- Metals	6010/1470	1:20	1:20	NA	NA	NA	1:20	No	NA	NA	NA	NA	NA
• TPH	418.1	1:20	1:20	NA	NA	1:20	1:20	Yes	NA	NA	NA	NA	NA
• PCB	8080	NA	NA	1:20	1:20	1:20	1:20	NA	External	Yes	NA	NA	NA
• TCL Organics	CLP-SOW/ OLMO 1.8	NA	NA	1:20	1:20	NA	1:20	NA	Yes	Yes	NA	NA	NA
- Volatiles		NA	NA	1:20	1:20	NA	1:20	NA	Yes	Yes	NA	NA	NA
- Semivolatiles		NA	NA	1:20	1:20	NA	1:20	NA	Yes	Yes	NA	NA	NA
- Pesticides/PCBs		NA	NA	1:20	1:20	NA	1:20	NA	NA	Yes	NA	NA	NA
• TAL Inorganics	CLP-SOW/ ILMO 2.1	1:20	1:20	NA	NA	1:20	1:20	Yes	NA	NA	NA	NA	NA
• TOC	9060	1:20	NA	1:20	1:20	1:20	1/Day	NA	NA	NA	NA	NA	NA

The level of effort for precision measurements will be at a minimum of 1 in 10 or 1 per set. Target quantitative precision objectives are listed as applicable in Table 7-3.

Completeness is a measure of the amount of valid data obtained from the analytical measurement system. The target completeness objective will be 90 percent. The completeness of the data will be assessed during QC reviews. A quantitative definition of completeness is given in Section 8.0.

7.2 Sampling Procedures and Frequency

Sampling requirements for performance of the removal actions at Sites 2 and 9 and SSA4 are summarized in Table 7-1. Table 7-1 outlines the sample frequency, sample matrix, sample type and analytical program for each activity. The following sections describe the sampling program including sample collection procedures, number of samples, analytical parameters, method of evaluation, etc., for each type of sample.

7.2.1 Borrow Material

A borrow source will be located prior to removal action activities. One composite sample will be taken for each type of borrow material (i.e., soil backfill, topsoil) in order to verify that the material does not contain hazardous levels of constituents listed under either the Resource Conservation Recovery Act or Toxic Substance Control Act regulations. Each sample will be analyzed within a 5-day analysis period for the following parameters:

- Ignitability
- Corrosivity
- Reactivity
- Toxicity Characteristics Leaching Procedure (TCLP)
- PCBs
- Total petroleum hydrocarbons.

All borrow material will be located by the contractor. Certification that the material to be used meets the specifications will be submitted to the Navy's Technical Representative at least 10 days prior to being required for use at the sites. The soil backfill will be tested for the following geotechnical properties:

- Sieve analysis of fine and coarse aggregates (ASTM C 136)
- Moisture-density relations of soils and soil-aggregate mixtures (ASTM D 698)

- Material finer than No. 200 sieve (ASTM D 1140)
- Classification of soils for engineering purposes (ASTM D 2487)
- Liquid limit, plastic limit and plasticity index of soils (ASTM D 4318).

In addition, the topsoil will be tested to determine the pH and verify that it does not contain rocks larger than 1 inch in diameter. The Navy's Technical Representative will be notified at least 24 hours in advance of any sampling. No borrow material will be transported to the site until the proposed source and material tests have been accepted in writing by the Navy's Technical Representative.

7.2.2 Surface Soil Samples

Surface soil contamination will be determined on the remaining soil after the removal actions have been completed at Sites 2 and 9 and SSA4. This data will then be evaluated prior to placement of the topsoil and revegetation of the remediated areas. The sampling program will consist of collecting 54 composite surface (0- to 12-inch depth) soil samples at Sites 2 and 9; and 10 composite surface (0- to 6-inch depth) soil samples at SSA4. The number of samples collected from each site is summarized as follows:

- Site 2 - 48 surface soil samples
- Site 9 - 6 surface soil samples
- SSA4 - 10 surface soil samples.

These sample locations will be determined in the field, as determined by the NTR, and will be based on the visual evidence of soil contamination (i.e., stains) or will be at locations with a high potential for contaminant migration. Actual sample locations will be documented in the as-built drawings for each respective site.

Each soil sample will be analyzed for Target Compound List (TCL) parameters in accordance with Contract Laboratory Program (CLP) requirements and methodology. The analytical program design will be level D NEESA (equivalent to Level IV EPA) with the information contained for 100 percent validation by an independent party.

7.2.3 Water Samples

The excavations will be dewatered using a pump. Water entering the excavation will be collected and either pumped or drained by gravity from the excavation to minimize standing

water. The pump inlet will be filtered to prevent removal of fines from the excavation. If required, a sump pit will be excavated and the excavation will be sloped to the sump.

The water collected from excavations at Sites 2 and 9 and SSA4 will be transferred to a temporary holding tank (i.e., Frac tank or equivalent) and commingled with the decontamination water. One composite sample of the commingled water will be collected using a dedicated Teflon bailer and analyzed to determine if the water quality meets the Virginia NPDES or Hampton Road Sanitation District (HRSD) discharge limits.

7.2.4 Sediment Fence Deposits

Deposits along the sediment fence will be removed when the deposits are approximately one-half the height of the fence. The sediments will be placed into a roll-off bin, sampled, and analyzed. The sediment fence deposits will be utilized during site restoration operations if confirmed to be clean.

7.2.5 Decontamination Procedures

Cross contamination will be minimized during sample collection by:

- Requiring each sampler to wear new, clean latex and/or nitrile gloves at each sample location
- Decontaminating the sampling equipment between sample locations using the following procedure:
 - Wash equipment with laboratory detergent (Alconox, Sparkleen, or Liquinox) mixed with tap water using a brush to dislodge any particulate matter or surface film. The brush will be rinsed with tap water before replacing in the soap bucket.
 - Rinse equipment with tap water.
 - Rinse equipment with distilled water. This rinse will consist of dispensing distilled water over equipment via pouring or spraying, allowing approximately 30 seconds to drain, and then rinsing again.

If severe contamination is present, clean with acetone, allow to air dry, and triple rinse with distilled water.

- Collect all decontamination fluids and combine with other decontamination fluids generated on site for proper testing and disposal.

7.3 Analytical Field Equipment and Calibration Procedures

Equipment calibration will be performed in accordance with the CQC Plan. All field equipment used during this project will be calibrated and operated in accordance with the manufacturer's instructions and/or available standard operating procedures. Calibration and operation instruction sheets will be maintained on file. An instrument log will be maintained for each field instrument. This logbook will contain chronological entries which describe routine maintenance, calibration checks, operational deficiencies, and repairs.

All instruments will be calibrated once daily in accordance with manufacturer's guidelines, or more often if warranted. Scheduled periodic calibration of testing equipment does not relieve field personnel of the responsibility of employing properly functioning equipment. If an individual suspects an equipment malfunction, the device shall be removed from service, tagged so that it is not inadvertently used, and the appropriate personnel notified so that a recalibration can be performed or a substitute piece of equipment can be obtained.

7.4 Off-Site Laboratories and Methods

Measuring and test equipment used at the selected Quanterra (formerly ITAS) laboratories will be controlled and subject to a formal calibration program in accordance with NEESA requirements. The calibration program will provide equipment of the proper type, range, accuracy, and precision to supply data compatible with project requirements and desired results. Calibration of measuring and test equipment may be performed internally, using laboratory reference equipment and standards, or externally by agencies or manufacturers.

The following laboratories have been identified to perform analytical work for this delivery order:

Laboratory Location	Current and Pending State Certifications	Approval/Qualified by Status
Quanterra, Inc.-Export, PA 5103 Old William Penn Hwy. Export, PA 15632 (412) 731-8806 Laboratory Project Manager - Tom Daniels QC Coordinator - Nasrin Derubeis	CA, CT, CO, MA, NH, NJ, NY, PA Pending - FL, MD	Navy - NACIP Navy - HAZWRAP Corps of Engineers (Buffalo District) EPA Contract Laboratory Program

Laboratory Location	Current and Pending State Certifications	Approval/Qualified by Status
Quanterra, Inc.-Knoxville, TN 5815 Middlebrook Pike Knoxville, TN 37921 (615) 588-6401 Laboratory Project Manager - Alice Moore QC Coordinator - Kerry Klemm	AL, CA, FL, MN, NY, NC, NJ, SC, TN, UT, VA, WI	American Industrial Hygiene Assoc. EPA Contract Laboratory Program Corps of Engineers (Missouri River District) Navy - NACIP Navy - HAZWRAP AALA Accredited

Geotechnical services will be provided by:

Quanterra, Inc.-Oak Ridge Laboratory

1570 Bear Creek Road
 Oak Ridge, TN 37830
 (615) 482-6497

Laboratory Project Manager - Beverly Leamon
 Laboratory Operations Supervisor - Ralph Cole

The Quanterra-Export, PA laboratory will act as the host laboratory for all chemical analyses. Prior to sending any samples to the back-up laboratories (except for nitroexplosives analysis in Knoxville) the Export Laboratory will contact the QC Representative to obtain approval. The Quanterra-Oak Ridge, TN laboratory will provide geotechnical testing services. At the present time, each of the laboratories listed above, except for the Quanterra-Oak Ridge laboratory, have been approved by the Navy in accordance with NEESA 20.2-047 and subsequent versions. Since the Quanterra-Oak Ridge laboratory will be performing only minor geotechnical tests, NEESA approval is not anticipated to be required.

QC objectives for precision, accuracy, completeness, and sensitivity are outlined in Tables 7-3 and 7-4. Internal quality control samples are summarized in Table 7-4. Table 7-5 describes the sample containers, preservatives, and holding times for the analytical program.

7.5 Chain-of-Custody

Sample integrity from the time of collection to data reporting is required as part of the sampling and analytical program. This includes the ability to trace the possession and handling of samples from the time of collection through analysis and final disposition. This documentation is referred to as "chain-of-custody." The components of this chain and the procedures for their use are described below.

TABLE 7-5
SAMPLE CONTAINERS, PRESERVATIVES, AND HOLDING TIMES
MINE CASINGS AND DEBRIS REMOVAL
SITES 2 AND 9 AND SSA4 - NAVAL WEAPONS STATION
YORKTOWN, VIRGINIA

Parameter	Sample Type	Sample Container	Preservative	Holding Time
Ignitability	Soil	1 x 25 mL amber glass	4°C	N/A
Corrosivity	Soil	1 x 25 mL amber glass	4°C	Immediate
Reactivity	Soil	1 x 2 mL amber glass	4°C	Analyze as soon as possible
TCLP				
- Volatile organics	Soil	2 x 60 mL glass	4°C	14 days to TCLP, 14 days to analyze
- Semivolatile organics	Soil	1 x 250 mL amber glass	4°C	14 days to TCLP, 7 days to extract, 40 days to analyze
- Pesticides/PCB	Soil	1 x 250 mL amber glass	4°C	
- Herbicides	Soil	1 x 250 mL amber glass	4°C	
- Metals	Soil	1 x 250 mL amber glass	4°C	180 days to TCLP, 180 days to analyze
Total PCB	Soil/Water	1 x 250 mL amber glass/ 1 x 80 oz amber glass	4°C/4°C	14 days to extract, 40 days to analyze, 7 days to extract, 40 days to analyze
TPH	Soil/water	1 x 250 mL amber glass/ 1 x 1L amber glass	4°C/H ₂ SO ₄	28 days/28 days
TCL volatiles	Soil/water	2 x 60 mL glass/ 2 x 40 mL glass	4°C/H ₂ SO ₄	10 days/10 days
TCL semivolatiles	Soil/water	1 x 250 mg amber glass/ 1 x 80 oz amber glass	4°C/None	10 days to extract, 40 days to analyze/5 days to extract, 40 days to analyze
TCL pesticides/PCBs	Soil/water	1 x 250 mL amber glass/ 1 x 80 oz amber glass	4°C/None	
TAL metals	Soil/water	1 x 250 mL amber glass/ 1 x 1L plastic	4°C/HNO ₃	180 days/180 days
TOC	Soil/water	1 x 60 mL amber glass/ 1 x 250 mL amber glass	4°C/H ₂ SO ₄	28 days/28 days
Nitroexplosives	Soil	8 oz amber glass	4°C	14 days to extract/40 days to analyze

7.5.1 Sample Identification

Samples will be identified using a unique sample identification number. The identification procedures are presented in the Section 4.0 Sampling and Analysis of the Removal Action Work Plan.

7.5.2 Sample Identification Labels

Sample labels will be attached to each sample collected and will identify:

- Project number
- Site number
- Sample number
- Date
- Time
- Collector's name
- Bottle number
- Preservatives
- Analyses requested.

Sample numbers will be designated in accordance with Section 4.0 - Sampling and Analysis of the Removal Action Work Plan.

7.5.3 Analysis Request and Chain-of-Custody Record

All samples will be accompanied by an analysis request and chain-of-custody record. The information recorded on this form will include:

- Project name/number
- Laboratory destination
- Sample team members
- Sampling station number, location, and description
- Date and time of sample collection, sample type, container type, and condition upon receipt
- Specific analytical program for each sample
- Special instructions and/or sample hazards, as appropriate

- Sample custodian's signature in the designated space indicating company, date, and time.

7.5.4 Shipping of Samples

All samples shipped to a laboratory will be placed in containers and sealed with custody seal. It is anticipated that samples will be sent to the appropriate laboratory via overnight courier. Samples will be delivered to the laboratory for analysis as soon as practicable. If samples are not shipped the same day, custody will be maintained in a locked vehicle or refrigerator. The sample will be accompanied by the chain-of-custody record. Procedures for packing these samples for shipment will be as follows:

- Maximum allowable weight per package is 60 pounds for overnight delivery.
- Secure the container lids with evidence tape. At the same time, ensure that the sample labels are secured to the container.
- Place about 3 inches of inert cushioning material, such as Styrofoam, in the bottom of the cooler, or install a cooler liner.
- Place each glass sample container inside a bubble wrap plastic bag.
- Place the containers in the cooler in such a way that they do not touch.
- Fill the cooler with blue ice or wet ice.
- Tape the cooler drain shut.
- Tape cooler shut and place custody tape.

7.6 Field Documentation

Field documentation will be performed in accordance with the CQC Plan. Documentation will include field logbooks, sample collection logs, variance reports, nonconformance logs, and photographs. In addition, procedures for correcting documentation will be followed.

7.7 Laboratory Custody Procedures

A designated laboratory sample custodian will accept custody of the shipped samples and will verify that the samples received match those listed on the chain-of-custody records. Pertinent

information as to shipment, pickup, and courier will be entered in the "Condition on Receipt" section. The custodian then enters the sample numbers into a logbook.

The laboratory custodian will use the sample identification label number and will assign a unique laboratory number to each sample. The samples will then be transferred to the proper analyst or stored in the appropriate secure area.

The custodian will distribute samples to the appropriate analysts. Laboratory personnel will be responsible for the care and custody of samples from the time they are received until the sample is exhausted or returned to the custodian. The sample analysis data will be recorded on the laboratory report form.

When the sample analyses and necessary QA checks have been completed in the laboratory, the unused portion of the sample will be disposed of properly. All identifying stickers, data sheets, and laboratory records will be retained as part of the permanent documentation. Sample containers and remaining sample material may be assigned a "Disposal Record No." as shown on the chain-of-custody record.

7.8 Field Quality Control Samples

Four types of field QA/QC samples will be collected. These are equipment rinsate samples, field blanks, field duplicate samples, and trip blanks. The field QA/QC requirements are summarized in Table 7-6.

7.8.1 Equipment Rinsate Samples

As a check of decontamination procedures and to evaluate the potential for cross-contamination between sample locations, one equipment rinsate sample will be collected. Each equipment rinsate sample will be taken from the final decontamination rinse and analyzed for the same parameters as the corresponding samples. The frequency of equipment rinsate sample collection is specified in Table 7-6. Equipment rinsate samples will not be collected if dedicated sampling equipment is used.

7.8.2 Field Blanks

Field blanks consist of the source water used in decontamination and steam-cleaning. Field blanks will be prepared with laboratory grade distilled water and placed into the same

TABLE 7-6
QUALITY CONTROL SAMPLE REQUIREMENT
MINE CASINGS AND DEBRIS REMOVAL
SITES 2 AND 9 AND SSA4 - NAVAL WEAPONS STATION
YORKTOWN, VIRGINIA

Sample Type	Required Frequency for Level C	Analytical Program
Trip Blank	1 per cooler	Volatile organics
Equipment Rinsate	1 per day	Same as field samples
Field Blank	1/event	Same as field samples
Field Duplicate ^a	10 percent	Same as field samples
Laboratory QC ^b	10 percent	Same as field samples

^aThe duplicate must be taken from the same sample which will become the laboratory matrix/spike duplicate for organics or for the sample used as a duplicate in inorganic analysis. One field duplicate will be collected at each site for every ten samples collected or every set of samples.

^bQuadruplicate sample volumes required for matrix spike/matrix spike duplicate analysis of organic samples under CLP analysis protocols and matrix spike/matrix duplicate analysis of metal samples under CLP analysis protocols. A quadruplicate sample volume will be collected for every 20 samples or every set of samples.

containers required for the equipment rinsate. The frequency of field blank sample collection is specified in Table 7-6.

7.8.3 Field Duplicate Samples

The collection of field duplicate samples is required to assess the reproducibility of field sampling methods and repeatability of laboratory analysis. One duplicate sample will be collected per 10 field samples or per event. The duplicate soil sample will be obtained from adjacent sample interval and will be analyzed for the same parameters as the corresponding sample.

7.8.4 Trip Blanks

Trip blanks will accompany sample containers for volatile organic analyses (VOA) from point of origin (i.e., laboratory) to the field and then back to the laboratory. The trip blank will assist in evaluating adsorption of organics through the VOA container during the course of sample shipment. This sample will provide additional confidence to the volatile organic results reported for actual samples, assuming no contamination is detected in the trip blank.

7.8.5 Laboratory QA/QC

The laboratory program will be in accordance with procedures outlined in NEESA, Section 7.1 (1988) for DQO Levels C and D, and will include the analysis of one matrix spike and matrix spike duplicate.

8.0 VERIFICATION AND VALIDATION OF CHEMICAL DATA

Chemical Data Quality management will be performed in accordance with the CQC Plan (IT, 1992). All raw data collected from the sampling tasks and used in the report will be identified and included in appropriate appendices with the reports. Data will be reported in units, with accuracy and precision, in accordance with industry regulatory agency(ies) standards. Reduction and validation procedures for laboratory analytical data will be performed by IT.

8.1 Data Reporting

The laboratory will report the method blanks, blank/spike surrogates, matrix spikes, matrix spike duplicates, duplicates, and initial and continuing calibration.

8.2 Data Assessment

The project team will assess precision, accuracy, and completeness of data generated during the field activities. The accuracy of field data will be assessed by spiking samples with known standards. The precision of field data will be assessed through the use of duplicate, field rinsate, and trip blank samples, as discussed in Section 7.0.

In addition, laboratory analytical data will be assessed by the project manager for precision and accuracy. The data will be checked for completeness, compared to field blank and sample duplicate results, evaluated in context to the field conditions defined in the field notes and other documentation, and compared to the overall completeness goal of this project.

Data accuracy, precision, and completeness values will be summarized in the assessment report. Data verification requirements are presented in Table 8-1. The quantitative definition of accuracy, precision, and completeness is presented in the CQC Plan.

8.3 Performance and System Audits

To verify compliance with the CQC Plan, the QC Representative or designated audit leader will conduct planned and documented audits in accordance with the CQC Plan. These audits will consist of an evaluation of the implementation of project procedures, an evaluation of work areas and activities, and a review of activity documentation, as appropriate. Audits will be conducted at the level of detail necessary for the activity audited and will be completed

TABLE 8-1
SUMMARY OF DATA VERIFICATION REQUIREMENTS FOR CHEMICAL DATA
MINE CASINGS AND DEBRIS REMOVAL
SITES 2 AND 9 AND SSA4 - NAVAL WEAPONS STATION
YORKTOWN, VIRGINIA

DATA USE (Site No.)	VERIFY CHAIN-OF- CUSTODY	VERIFY HOLDING TIME	VERIFY CALIBRATION	CALIBRATION CHECK PERFORMED	REVIEW OF INTERNAL QC SAMPLES	REVIEW OF NONCONFORMANCE REPORTS	CLF DATA PACKAGE REQUIRED	CERTIFICATE OF ANALYSIS REQUIRED	NUMERICAL LISTING OF DATA ONLY
Determine if borrow material is acceptable (Sites 2 and 9 and SSA4)	X	X	X	X	X	X		X	
Determine if water from decon and dewatering meets discharge limits by VA NPDES or HRSD (Sites 2 and 9 and SSA4)	X	X	X	X	X	X		X	
Characterize sediment fence deposits for disposal (Sites 2 and 9 and SSA4)	X	X	X	X	X	X		X	
Characterize materials for disposal (Sites 2 and 9 and SSA4)	X	X	X	X	X	X		X	
Characterize site soils for future remediation, if any (Sites 2 and 9 and SSA4)	X	X	X	X	X	X	X	X	

using written checklists. Audit results will be formally documented and submitted to appropriate management personnel for review. Audits will be performed in accordance with the CQC Plan.

9.0 PREVENTATIVE MAINTENANCE

9.1 Field Measurement Equipment

As per the requirements of CQC Plan, the measurement equipment used in support of the CQC program will be subject to a preventative maintenance program. The field measurement equipment includes, when applicable, metal detector for scanning of subsurface soils, nuclear gauge for in-place density and moisture content, etc. Maintenance of the field measurement equipment will be performed in accordance with manufacturers' recommendations based on the degree and frequency of use and the sensitivity of the equipment to environmental conditions such as mechanical shock, temperature, and atmospheric moisture. Records of operation and maintenance, including calibration, of the field measurement equipment used in support of the CQC Plan Addenda will be maintained on site and will be available within a reasonable time to the Navy, or its representative, for inspection or auditing during the construction period.

9.2 Laboratory Equipment

Maintenance of laboratory equipment used in support of this CQC Plan Addenda will be conducted by the laboratory(ies) in accordance with the laboratory QC procedures and/or quality assurance and QC requirements stipulated by the data quality objectives in this plan. The laboratory analyses performed during the remedial action will include chemical and geotechnical analyses for characterization and verification of borrow soils, excavation, and waste disposal in accordance with the Removal Action Work Plan and Contract specifications. Records of laboratory equipment maintenance will be available within a reasonable time to the Navy, or its representative, during any laboratory inspection or auditing in compliance with government regulations.

10.0 CONSTRUCTION/REMEDATION VERIFICATION AND QUALITY CONTROL

10.1 Data Quality Objectives

DQOs have been developed for construction/remediation verification inspection and testing of the work activities associated with the removal actions at Sites 2 and 9 and SSA4 as required by the delivery order and contract specifications. Development of DQOs was performed in two stages as described in Section 9.0 of the CQC Plan. The first stage of the DQO development process consisted of a review of delivery order specifications and information to determine the following scope of work:

- Preliminary activities
 - Preconstruction conference and site walk
 - Preconstruction submittal preparation
 - Subcontractor, equipment, and material procurement
 - Borrow study
 - Permit acquisition
- Mobilization
- Site setup
 - Initial site survey
 - Clearing and grubbing
 - Site access road construction
 - Field office establishment
 - Work area delineation
 - Security fence installation
 - Contamination control zone identification
 - Personnel decontamination facility establishment
 - Equipment decontamination pad, drum handling area, and roll-off container storage area construction
 - Equipment and material inventory and inspection
- Site preparation
 - Field subsurface survey
 - Site feature protection
 - Erosion and sedimentation control installation
- Waste (i.e., UXO, surface debris, drums, and batteries) removal and disposal
 - Dust control
 - Excavated material loadout
 - Roll-off container management
 - Temporary containment of excavated soil

- Decontamination
- Subsurface Scan
- Excavation survey
- Sampling and analysis
- Transportation and disposal

- Site restoration
 - Backfilling
 - Grading
 - Topsoil placement
 - Final site survey
 - Revegetation

- Demobilization

- Closeout report preparation.

The DQOs for these work activities, if applicable, are presented in Table 10-1 and are based on data use, specifications, regulatory guidelines, performance criteria, and NEESA quality level requirements.

The second stage of DQO development includes an evaluation of sample types, test methods, frequency, QC samples, and verification schedule. Verification inspection and testing will be required during the following remedial activities.

10.2 Inspection of Construction/Remediation Activities

Inspections will be performed to verify compliance with the contract and delivery order plans, specifications, and drawings and standard engineering practice. Inspections will be performed for each definable feature of work in accordance with inspection procedures described in the CQC Plan. A four-phase inspection system will be implemented consisting of preparatory, initial, follow-up, and completion inspections. The Site Superintendent or QC Representative will be responsible for scheduling and documenting these inspections.

10.2.1 Removal Action Inspection Requirements

The primary construction/remedial activities for the removal actions at Sites 2 and 9 and SSA4 are mobilization, site setup, site preparation, waste removal and disposal, and site restoration. Each of these work activities has several definable features of work which will

TABLE 10-1
DQO SUMMARY, CONSTRUCTION
MINE CASINGS AND DEBRIS REMOVAL
SITES 2 AND 9 AND SSA4 - NAVAL WEAPONS STATION
YORKTOWN, VIRGINIA

SPECIFICATION REQUIREMENT	DATA USE	MATRIX	METHOD OR PROCEDURE	FREQUENCY	ESTIMATED NUMBER OF FIELD TESTS	ESTIMATED NUMBER OF LAB TESTS	PERFORMANCE SPECIFICATION	SAMPLE TYPE
Backfilling and Topsoil Placement Section 02220 (all)	Suitability of borrow materials; determination of moisture/density curve	Backfill Material	ASTM D2487	One per material source	None	1	Complies with specifications	Composite
			ASTM D4318	One per material source	None	1	Plasticity index ≤ 12 ; liquid limit ≤ 35	Composite
			ASTM D1140	One per material source	None	1	Percent by weight passing No. 200 sieve $\leq 25\%$	Composite
			ASTM D698	One per material source	None	1	Development of optimum moisture/density curve	Composite
			Visual Inspection	As necessary	None	None	Maximum particle diameter $\leq 1/2$ the lift thickness at the intended location	Discrete
			Certification of Analysis as detailed in Table 7-1	One per material source	None	1	Soils must be tested to verify that it does not contain hazardous constituents listed under either RCRA or TSCA.	Composite

TABLE 10-1
(continued)

SPECIFICATION REQUIREMENT	DATA USE	MATRIX	METHOD OR PROCEDURE	FREQUENCY	ESTIMATED NUMBER OF FIELD TESTS	ESTIMATED NUMBER OF LAB TESTS	PERFORMANCE SPECIFICATION	SAMPLE TYPE
Backfilling and Topsoil Placement - Continued Section 02220 (all)	Suitability of borrow material (topsoil)	Topsoil	Certification of Analysis as detailed in Table 7-1	One per source	None	1	<ul style="list-style-type: none"> • Soils must be tested to verify that it does not contain hazardous constituents listed under either RCRA or TSCA. • Complies with specifications • pH 5.5 to 7.0. 	Composite
			Visual Inspection	As necessary	None	None	Maximum particle diameter meter ≤ 1 inch.	Discrete
	Verification of backfill material placement performance	Backfill Material	ASTM D2922-81 and ASTM D3017-88	One test for every 2,500 sq. ft. of each 12 inch lift		None	Density = 85% of the maximum dry density near optimum moisture content ($\pm 5\%$) as determined by ASTM D698.	In-situ
Crushed aggregate, base course Revised specification sections	Source verification of aggregate	Aggregates	Suppliers certificate of analysis	None	None	None	Gravel will consist of 6-inch (minimum) Virginia Dept. of Transportation course aggregate (Size No. 1).	Composite
Off-site transportation and disposal of hazardous wastes Section 02223	Permitting of waste	UXO, drums, surface debris, and batteries	Review of applicable regulations and source evaluation of waste receivers	As necessary	None	See Analytical Program Table 7-1	Review by a permitting and regulation specialist	Composite

TABLE 10-1
(continued)

SPECIFICATION REQUIREMENT	DATA USE	MATRIX	METHOD OR PROCEDURE	FREQUENCY	ESTIMATED NUMBER OF FIELD TESTS	ESTIMATED NUMBER OF LAB TESTS	PERFORMANCE SPECIFICATION	SAMPLE TYPE
Land Survey Section 02220	<ul style="list-style-type: none"> Initial site survey to delineate waste areas and lines and grades of work areas, road, and E&S control feature Excavation survey to document removal volumes Final site surveys to confirm final grades and document "As-Built" conditions 	Soil	General land survey techniques	As necessary	None	None	Surveys performed by professional land surveyor registered in the state of Virginia Vertical Control-0.01 ft Horizontal Control-1 ft Review by Professional Engineer	Discrete
Site restoration Revised specification section	Verification of material and seed placement	Seed	Letter of certification from seeding subcontractor	None	None	None	<ul style="list-style-type: none"> Seed must match existing vegetation. Apply at a rate of 5 lbs per 5000 sq. ft. 	Discrete
	Verification of material and mulch placement	Mulch	Letter of certification from seeding subcontractor	None	None	None	<ul style="list-style-type: none"> Spread at a rate of 1.5 tons per acre (or in accordance with the manufacturers guidelines). 	Discrete
	Verification of material and fertilizer placement	Fertilizer	Letter of certification from seeding subcontractor	None	None	None	<ul style="list-style-type: none"> Fertilizer FS O-F-241 Type I, Class 2, 10-10-10 type. Apply at a rate of 25 lbs per 1000 sq. ft. 	Discrete

TABLE 10-1
(continued)

SPECIFICATION REQUIREMENT	DATA USE	MATRIX	METHOD OR PROCEDURE	FREQUENCY	ESTIMATED NUMBER OF FIELD TESTS	ESTIMATED NUMBER OF LAB TESTS	PERFORMANCE SPECIFICATION	SAMPLE TYPE
Site restoration (continued)	Verification of material and limestone placement	Agricultural limestone	Letter of certification from seeding subcontractor	None	None	None	<ul style="list-style-type: none"> • Commercial agricultural limestone of 94-80-14 analysis. • Apply at a rate of 70 lbs per 1000 sq. ft. 	Discrete
Erosion control structures: - Silt fence - Straw hay bales - Temporary drainage swales	Verification of material and installation. Inspect structure for damage	E&S control feature	Visual Inspection	Daily after heavy rainfall	None	None	<ul style="list-style-type: none"> • Material and installation complies with specifications. • Remove sediment deposits from the erosion control structure when deposits are 1/2 the height of the barrier. • Repair damaged structures 	Discrete

require performance monitoring. The following sections outline the four phases of inspection and associated inspection items for these activities.

Mobilization and Site Setup. After mobilization, site setup activities will be initiated consisting of an initial site survey, site access road construction, work area delineation, security fence installation, contamination control zone identification, personnel decontamination facility construction, equipment decontamination pad construction, and equipment and material inventory and inspection.

Preparatory inspections for mobilization and site setup activities at Sites 2 and 9 and SSA4 will consist of:

- Confirmation that the preconstruction site walk was conducted with the Navy personnel, site superintendent and appropriate construction personnel to inspect the waste areas, identify work areas, and discuss NWS regulations, construction schedule, health and safety coordination and QC
- Verification that sufficient labor, material, and equipment are available to perform site preparation
- Confirmation that all project personnel have satisfied NWS security requirements and have attended the preconstruction safety meeting
- A review of the delivery order plans, specifications, and drawings which detail the contract and delivery order requirements
- Verification that the proper NWS permits (i.e., welding, digging, burning, etc.) are in place to perform site preparation
- An inspection of the areas designated for clearing and grubbing to verify that the areas have been marked accordingly by the NWS Natural Resources Department
- An inspection of the site trailer to confirm that it meets delivery order specifications and is located in the vicinity of Site 4
- An inspection of the alignments for the temporary construction entrances/access roads, security fence, sediment fence, drainage swales, and designated work areas (i.e., personnel and equipment decontamination facilities, etc.) and contamination control zones to verify locations and dimensions are as shown in the drawings and field referenced accordingly

- An inspection of the material and equipment mobilized to confirm that it is in compliance with delivery order specifications and NWS regulations and is in satisfactory condition or good working order
- An inspection of the designated waste areas to take photographs and verify that all areas have been identified as shown in the drawings.

Initial inspections will be conducted during the early stages of each site setup activity at Sites 2 and 9 and SSA4 and will consist of:

- An inspection of the site setup activities to verify that the work is being performed in accordance with the delivery order plans, specifications, and drawings
- An inspection of clearing and grubbing operations to confirm that felled trees are being staged at the sites to serve as wildlife shelters
- An inspection of the site trailer to make sure it is furnished, equipped with a sign, anchored as specified, and the required utility connections have been made or are being arranged
- An inspection of temporary construction entrance and access road construction to confirm the alignments are stripped of vegetation and roadways are constructed as detailed in the drawings using the specified road construction materials
- An inspection of personnel decontamination facility, equipment decontamination pad, drum handling area and roll-off container storage area construction to verify the work areas are constructed as detailed in the drawings using the specified materials
- An inspection of security fence installation to ensure that the specified installation procedures are being followed along the designated alignments
- Verification that the health and safety plan is being implemented.

Follow-up inspections will be performed for each site preparation activity for Sites 2 and 9 and SSA4 on a daily basis to verify continued compliance with delivery order plans, specifications, and drawings. Inspection items for each site preparation activity will be similar to those required for the initial inspections. Note that sediment fence will be monitored even after completing installation to check the integrity and initiate maintenance, as required.

A final completion inspection will be conducted at the conclusion of each site preparation activity to verify and document that the work is complete and is in compliance with the delivery order plans, specifications, and drawings.

Site Preparation

Site preparation will consist of a field subsurface survey, site feature protection, and erosion and sedimentation control installation for each site.

Preparatory inspections for site preparation activities at Sites 2 and 9 and SSA4 will consist of:

- A review of the delivery order plans, specifications, and drawings which detail the contract and delivery order requirements.
- Verification that sufficient labor, material, and equipment are available to perform site preparation
- An inspection of the material and equipment required for site preparation to confirm that it is in compliance with delivery order specifications and NWS regulations and is in satisfactory condition or good working order
- Verification that the proper NWS permits (i.e., welding, digging, burning, etc.) are in place to perform site preparation
- An inspection of the alignments for the sediment fence and drainage swales are as shown in the drawings and field referenced accordingly
- An inspection to identify all site features.

Initial inspections will be conducted during the early stages of each site preparation activity at Sites 2 an 9 and SSA4 and will consist of:

- An inspection of the site preparation activities to verify that the work is being performed in accordance with the delivery order plans, specifications, and drawings
- An inspection of the field subsurface survey to confirm that the areas to be traversed during the removal actions have ben surveyed to locate existing piping, utilities, and any type of underground obstruction in accordance with Section 3.4.4.1 of the Removal Action Work Plan.

- An inspection of each site to make sure site features such as signs, utilities, monitoring wells, roads, trees, etc., are protected as specified in Section 3.4.4.2 of the Removal Action Work Plan.
- An inspection of erosion and sedimentation control installation to ensure that the specified installation procedures are being implemented in accordance with Section 3.4.4.3 of the Removal Action Work Plan.
- Verification that the health and safety plan is being implemented.

Follow-up inspections will be performed for each site preparation activity for Sites 2 and 9 and SSA4 on a daily basis to verify continued compliance with delivery order plans, specifications, and drawings. Inspection items for each site preparation activity will be similar to those required for the initial inspections. Note that sediment fence will be monitored even after completing installation to check the integrity and initiate maintenance, as required.

A final completion inspection will be conducted at the conclusion of each site preparation activity to verify and document that the work is complete and is in compliance with the delivery order plans, specifications, and drawings.

Waste Removal and Disposal

Waste removal and disposal activities at Sites 2 and 9 and SSA4 will consist of excavation and removal of various waste materials using conventional earthmoving equipment, dust control, excavated material loadout, excavation dewatering, as required, roll-off container management, equipment decontamination, subsurface scan, excavation survey, sampling and analysis, and transportation and disposal. Waste materials include batteries, asphalt, UXO, drums, railroad ties, and construction/demolition debris.

Preparatory inspections for waste removal and disposal activities at Sites 2 and 9 and SSA4 will consist of:

- A review of delivery order plans, specifications, and drawings to determine:
 - Removal limits of waste area
 - Types of waste material
 - Procedures for removing and processing wastes
 - Method of dewatering excavations

- Program for sampling and analysis
- Requirements for disposal.
- Verification that sufficient labor, material, and equipment are available to perform waste removal and disposal
- An inspection of materials and equipment to verify that it is in compliance with delivery order plans and specifications and NWS regulations and is in satisfactory condition or good working order
- Confirmation that the correct NWS permits (i.e., welding, digging, burning, etc.) have been obtained and transportation and disposal arrangements have been made to perform waste removal and disposal
- An inspection of the waste areas to verify that the boundaries have been defined using wooden stakes and flagging as detailed in the drawings.

Initial inspections will be conducted during the preliminary phase of removal for each waste area at Sites 2 and 9 and SSA4 to confirm that work being performed is in accordance with delivery order plans, specifications, and drawings. In general, inspections will be comprised of verifying that the removal procedures for each type of waste material are being implemented accordingly. Specific inspections will include:

- An inspection of UXO removal operations to confirm that work is being completed in accordance with Section 3.4.5.2 of the Removal Action Work Plan
- An inspection of surface debris removal operations to verify that work is being performed in accordance with Section 3.4.5.3 of the Removal Action Work Plan
- An inspection of railroad tie removal operations to confirm that railroad ties are placed in rolloff containers or equivalent and transported to the on-site storage facility at NWS Yorktown
- An inspection of drum removal operations to verify that drums are being removed in accordance with Section 3.4.5.5 of the Removal Action Work Plan
- An inspection of battery removal operations to verify that batteries are removed during performance of the removal actions at NWS Yorktown Sites 4, 16, and 21 (Section 3.4.5.6 of the Removal Action Work Plan)
- General inspections at each site to verify that:

- The health and safety plan is being implemented accordingly
- Dust suppressors are being used as specified and in accordance with manufacturer's guidelines
- Excavated material loadout and temporary containment of soil is being performed in accordance with the Removal Action Work Plan
- Roll-off container management is being done as outlined in the Removal Action Work Plan
- Dewatering equipment is in place and functioning properly.
- Equipment used to perform waste removal operation is decontaminated as required.

Follow-up inspections will be performed as the waste materials from each designated waste area of Sites 2 and 9 and SSA4 are removed to verify continued compliance with delivery order requirements. In addition to the inspection items required for initial inspection, the follow-up inspections will include confirming that the sampling and analysis program detailed in the delivery order plans is being implemented accordingly and the waste materials are being transported and disposed of as follows:

- Batteries as a hazardous waste in an out-of-state hazardous waste landfill via DOT-approved covered end dumps
- Drum contents based on VADWM review in either a Virginia Solid Waste Management Facility (SWMF) as nonhazardous waste or as a hazardous waste at an out-of-state hazardous waste landfill
- Scrap metal and debris recycled or in a Virginia SWMF
- Mine casings recycled.

Final completion inspections will be conducted at the conclusion of each waste area removal at Sites 2 and 9 and SSA4 to verify and document that the work is complete and in compliance with the delivery order plans, specifications, and drawings. In addition, excavation surveys will be conducted at each waste area to document removal volumes.

Site Restoration

Site restoration will consist of backfilling, grading, topsoil placement, and revegetation, as appropriate, of all areas disturbed during the performance of the removal actions at Sites 2 and 9 and SSA4.

Preparatory inspections for site restoration activities at Sites 2 and 9 and SSA4 will include:

- A review of the delivery order plans, specifications, and drawings which detail the contract and delivery order requirements
- An inspection of the materials and equipment to verify it is in compliance with delivery order plans and specifications and NWS regulations and is in satisfactory condition or good working order
- Confirmation that surveys have been performed at each of the waste removal areas at Sites 2 and 9 and SSA4 to document the volume of waste removed
- A review of the borrow material (i.e., soil backfill and topsoil) certifications which detail the chemical analyses and geotechnical test results to confirm the materials are not hazardous and meet the following geotechnical requirements:
 - Soil backfill must be reasonably free of roots, wood, scrap material, vegetation, refuse, soft unsound particles, and frozen, deleterious, or objectionable material with a classification of GC or SC, a maximum liquid limit of 35, a maximum plasticity index of 12 and a maximum of 25 percent by weight passing No. 200 sieve
 - Topsoil must be natural, friable, and well drained soil materials representative of the surrounding area and free of subsoil, stumps, irreducible material greater than 1 inch, brush, weeds, and other deleterious material. The pH of the topsoil must be maintained between 5.5 and 7.

Initial inspections will be conducted during the startup of each site restoration activity at Sites 2 and 9 and SSA4 to verify that work is being performed in accordance with delivery order plans, specifications and drawings. The initial inspections for site restoration will consist of the following components:

- An inspection of soil backfill placement operations to verify the material is placed in 12-inch maximum compacted lifts at a relative density of 85 percent of the maximum dry density as determined by ASTM D 698.

- Confirmation that trees designated by the site superintendent and NWS Natural Resources Department are not damaged or destroyed during backfilling and grading operations
- An inspection of waste areas to verify that they are backfilled and graded to match existing contours and to provide positive drainage and prevent ponding of precipitation
- An inspection to verify that grade surveys are performed prior to final grading at each waste area, and the final grades are field referenced accordingly
- An inspection of topsoil placement operations to confirm a minimum of 4 inches of topsoil is placed prior to hydroseeding the disturbed areas
- An inspection to confirm that the topsoil is prepared for revegetation
- An inspection of revegetation operations to verify that the proper seed, fertilizer, lime, mulch and water, are applied at that specified rates using hydroseeding techniques to provide uniform coverage
- An inspection of erosion control blanket installation upon completion of hydroseeding to confirm that the manufacturer's installation guidelines are being followed
- Monitoring of dust conditions to verify that dust suppression methods are being employed, as necessary.

Follow-up inspections will be performed for each site restoration activity at Sites 2 and 9 and SSA4 on a daily basis to verify continued compliance with delivery order plans, specifications, and drawings. Inspection items for each site restoration activity will be similar to those required for the initial inspections with the additional inspection of all waste areas at Sites 2 and 9 and SSA4 as they are graded to the lines and grades shown in the drawings and final site surveys are completed.

A final completion inspection will be conducted at the conclusion of site restoration at each waste removal area to verify and document that the work is complete and is in compliance with the delivery order plans, specifications, and drawings. This inspection will document "As-Built" conditions. Final inspection of revegetation will be performed at the end of the maintenance period (i.e., 3 months) to confirm a minimum 80 percent coverage. Additional seed will be placed as necessary.

10.2.2 Detailed Inspection Information

Detailed information for the following removal action activities has been provided to facilitate performance of the four phases of inspection.

- **Preconstruction Site Walk** - The preconstruction site walk will be conducted with Navy personnel, the site superintendent, and appropriate construction personnel. Each area in which waste materials will be removed will be inspected. Because portions of the work will be performed in densely wooded areas, trees and bushes will be removed. The site superintendent and personnel from the NWS Natural Resources Department will inspect each site and identify trees that should not be removed. Other items discussed in the preconstruction site walk will be the location of equipment lay down and material storage areas, NWS regulations, the construction schedule, health and safety coordination, and construction quality assurance
- **Site Trailer** - The site trailer will be located in the vicinity of Site 4 - West Road Landfill. The actual location of the trailer will be determined in the field. The location of utility hook-ups will be identified by the NWS. Utility hook-ups will be performed by the contractor. A generator will be used if emergency power is needed or if utilities are not available. The trailer will be in accordance with the delivery order specifications. A sign (24 inches by 24 inches) will be placed on the trailer depicting the contractor's name, business phone number, and emergency phone number. The trailer will be anchored to resist high winds and will meet applicable state or local standards for anchoring mobile trailers.
- **Site Security Requirements** - Security requirements are presented in Section 01010 § 3.2.3 of the delivery order specifications. Prior to the start of work, the contractor will submit personnel information, and proof of citizenship. This information will be submitted within 10 working days of the preconstruction site walk.

NWS will conduct a preconstruction safety meeting to discuss base regulations. At a minimum, the Project Manager, Site Superintendent, Site Safety and Health Coordinator, and QC Representative will attend.

Equipment regulations are presented in Section 01010 § 3.2.4 of the delivery order specifications. Prior to use, NWS must inspect and approve the use of electric motors, internal combustion engines, and radio transmitting equipment. The equipment can not be used without prior approval. All transmitters must also be registered with the NWS security office.

Station permits will be required, at a minimum, for welding, digging, and burning. The permit and approval process takes approximately 7 calendar days. A hot work permit will be required for operations that produce temperatures in excess of 288 degrees

Fahrenheit. The contractor will submit a request for hot work permit to the NWS fire prevention branch.

- **Dust Suppression** - Dust suppressants will be used, where appropriate, in accordance with manufacturer's guidelines or the delivery order specifications. The Site Superintendent will specify the application of the dust suppressant as required to control dust emissions. The dust suppressants will be applied on unsurfaced base, subbase, and other unsurfaced travel ways. The surface will be wetted prior to application. The treated areas will be protected from traffic for a minimum of 2 hours. During excavation activities, the soil will be wetted to control dust emissions. If water is to be used as the dust suppressant, no protection time will be required.
- **Erosion and Sediment Control** - Erosion and sediment control will comply with the Virginia Erosion and Sediment Control Handbook (VA, 1992). Sediment fences and temporary diversion dikes will be constructed during the removal action activities. The sediment fence will be manufactured by Mirafi, Inc. or an equivalent and will be installed in accordance with manufacturer's recommendations. The sediment fence will consist of a reinforcement netting and sediment control fabric that are stitched together at the top and bottom. A wire reinforcement netting will not be used as indicated in the delivery order specifications.

The sediment fence will be installed and maintained in accordance with the minimum standards and specifications in the Virginia Erosion and Sediment Control Handbook. The sediment fences will be inspected immediately after a rainfall event and at least daily during prolonged rainfall. If required, repairs will be made immediately performed. Sediment deposits will be removed when the deposits are approximately one-half the height of the barrier. The sediments will be placed into a roll-off bin and disposed accordingly.

Temporary diversion dikes will be constructed, as necessary, to limit water from entering the excavations. The dikes will be constructed in accordance with the Virginia Erosion and Sediment Control Handbook. The location of the diversion dikes will be field determined and are not shown on the construction drawings.

- **Surface and Subsurface Excavation** - Inspection of the excavation will be performed to verify that the run-on diversion berms are intact, that areas to receive fill are properly prepared in conformance with the delivery order specifications, and that precipitation has not ponded within the excavation. The method of excavation will be observed to verify that the excavation meets OSHA standards and to verify that the utilities are clearly marked and avoided. Potentially clean and potentially contaminated soil will be separated prior to stockpiling. The segregation of metal, debris, wood, building materials, rubbish, unexploded ordnance, drums/containers, etc., from the soil prior to stockpiling and proper storage will be verified. All compaction testing will be observed to verify compliance with the delivery order specifications. A summary of the field

inspection program is presented in Table 10-1. Dust suppression operations during excavation will also be observed.

- **Equipment Decontamination** - Equipment coming in contact with waste materials during the construction/remediation activities may include trucks and conventional earthmoving equipment, such as backhoes and bulldozers. Equipment will be decontaminated using a low-alkaline, nonphosphorous detergent and potable water prior to removal from the site. Hand-held equipment will be cleaned in the same manner as the heavy equipment. A temporary decontamination station will be erected at each site to collect the rinsate. The rinsate from Sites 2 and 9 and SSA4 will be transferred to a temporary holding tank at each site and commingled with water collected during excavation dewatering activities.

The temporary decontamination pad for each site will be located at the perimeter of the exclusion zone. The temporary decontamination pad will be constructed of 40-mil PVC sheeting or equivalent sloped to a sump if needed. The ground surface will be prepared by removing sharp objects and placing the geotextile on the ground surface. The geotextile will be a minimum 8-ounce per square yard nonwoven fabric (i.e., Mirafi P150, Polyfelt TS700 or equivalent). The liner will be inspected prior to each use and swept clear of solids, if necessary. All equipment will be decontaminated prior to leaving the site. The external surfaces will be inspected and a decontamination log prepared documenting the procedure. After use, the temporary decontamination pad will be removed and disposed of at a Virginia sanitary landfill.

The decontamination procedure will begin with removing loose soil using a shovel (or equivalent) without using water. The soil will be placed into a drum. The equipment will then be decontaminated on the pad by manual scrubbing with a nonphosphate detergent to remove soil residue and/or cleaning with a high-pressure/low volume water or steam cleaner until all traces of visible material are removed. The rinsate will be pumped from the collection sump and transferred into a temporary storage tank located at each site.

- **Excavation Dewatering and Disposal** - The excavations will be dewatered, as necessary, using a pump. Water entering the excavations will be collected and either pumped or drained by gravity from the excavations to minimize standing water. The water inlets will be filtered to prevent removal of fines from the excavations. A sump pit will be excavated, if required, and the excavations sloped to drain to the sump.

The water collected from Sites 2 and 9 and SSA4 will be transferred to a temporary holding tank (i.e., Frac Tank or equivalent) and commingled with the decontamination water. The commingled water will be analyzed to determine if the water quality meets the Virginia NPDES discharge limits or the Hampton Road Sanitation District (HRSD) discharge limits. If required, the water will be treated using activated carbon techniques

to meet the discharge limits. The water will either be disposed of on site or transferred to a vacuum truck and disposed of into the HRSD sewer system.

- **Backfilling and Site Grading** - Soil material will comply with the delivery order specifications. The soil material will be free of roots, wood, scrap material, vegetation, refuse, soft unsound particles, and frozen, deleterious, or objectionable materials. The topsoil will consist of natural, friable, and well-drained soil materials representative of the surrounding area. The topsoil will be free of subsoil, stumps, irreducible material greater than 1 inch, brush, weeds, and other deleterious material as determined by the Site Superintendent or the NTR. The topsoil will be amended as necessary to maintain a pH between 5.5 and 7.

For cohesionless soil, backfill material will be placed in 12-inch maximum compacted lifts at 85 percent of the maximum dry density near optimum moisture content (± 5 percent) as determined by ASTM D 698. Compaction requirements for cohesive soil are 80 percent of the maximum dry density. A minimum of 4 inches of topsoil will be placed over waste removal areas to bring the areas to final grade.

- **Revegetation** - Revegetation will be performed using hydroseeding techniques. The hydroseed equipment will have a built-in agitation system and operating capacity sufficient to agitate, suspend, and homogeneously mix a slurry containing not less than 40 pounds of mulch, and a combined total of 7 pounds of fertilizer solids for each 100 gallons of water.

The seed applications will be in accordance with Navy guidelines. These guidelines specify seed application rates based on the time of year. Fertilizer and lime will be applied in accordance with the delivery order specifications.

After the areas are hydroseeded, a hydromulch with tackifier (i.e., American Excelsior Company fibermulch or equivalent) will be placed using the hydroseed equipment. Mulch will be placed on slopes of 3 horizontal:1 vertical (3H:1V) or shallower. The hydromulch will assist in the germination of seed and minimize erosion. The mulch will be free of pitch, tar, resin, chemical additives or weed seeds. Erosion control blankets (Curlex, American Excelsior Company or an equivalent) will be placed on slopes steeper than 3H:1V. The blankets will be installed and anchored in accordance with manufacturer guidelines. The slopes will be smooth and free of debris to provide proper contact with the soil. The blankets will be installed at least 3 feet above the slope crest, and extend a minimum of 2 feet beyond the toe of the slope. Areas will be revegetated under either of the following conditions:

- When grading operations stop for an anticipated duration of 30 days or more
- When an immediate cover is required to minimize erosion, or when erosion has occurred.

The seed, fertilizer, and mulch will then be applied at the rates listed above. Revegetation will not be conducted when the NTR determines that conditions are unfavorable.

Selected areas will be revegetated using manual techniques. The areas will be field determined and will be based on the area and the access. After the seed is applied, mulch will be placed on slopes of 3H:1V or shallower. Erosion control blankets will be placed on slopes steeper than 3H:1V.

10.3 Measuring and Testing Equipment

All field equipment used during construction/remediation verification will be calibrated in accordance with the manufacturer's instructions and/or available standard operating procedures. Calibration and operation instruction sheets will be maintained on file. The equipment calibration and maintenance program will comply with the CQC Plan. Field equipment anticipated for use includes:

- Nuclear density gage
- Magnetometer
- Survey equipment.

An equipment log will be maintained for all field equipment. The log will contain chronological entries which describe routine maintenance, calibration checks, operational deficiencies, and reports.

10.4 Field Documentation

Field documentation will be performed in accordance with the CQC Plan. Documentation requirements for inspection of construction/remediation activities include the following, when applicable:

- Field Activity Daily Logs (FADL)
- Sample Collection Logs
- Compaction Test Report
- Request for Analysis and Chain-of-Custody Forms
- Field Work Variance Reports
- Nonconformance Reports
- Noncompliance Check-Off List
- Daily Construction Quality Control Reports
- Daily Report to Inspector.

Standard forms for the above-mentioned documentation requirements are presented in Appendix B.

11.0 PEER REVIEW OF CONSTRUCTION/REMEDIATION VERIFICATION INFORMATION

11.1 Peer Review

The Project Manager will determine when peer review is required and will select the individual(s) who will perform the review. The extent and importance of peer review for a specific project phase will generally be based on the following criteria:

- Technical complexity of the work
- Difficulty of implementing and fulfilling the methods/procedures to be used in the project
- Complexity of the logistics required to perform the work
- Effect upon project schedule and succeeding project stages if part of the work does not meet project goals, such that either project goals/objectives must be revised or the work repeated.

11.2 Corrective Action

Corrective action may be implemented if DQOs are not met. Such corrective actions will be developed on a case-by-case basis and may include altering the field sampling or construction procedures. The Project Manager will work with the QC Representative, Site Superintendent, and the NTR or designee to assess what corrective action should be taken. The Project Manager will be responsible for initiating the corrective action; the Site Superintendent and the QC Representative will be responsible for ensuring that the corrective action is implemented. All corrective actions will be approved by the NTR.

REFERENCES

Baker and Weston, 1993, "Draft One Remedial Investigation Report, Sites 1 through 9, 11, 12, 16 through 19, and 21," Baker Environmental and Roy F. Weston, Inc., February, 1993.

Baker and Weston, 1992, "Draft Geophysical Investigation for Sites 1, 2, 3, 4, 12, 16, 17, and 21, Naval Weapons Station, Yorktown," Baker Environmental and Roy F. Weston, Inc., July, 1992.

C. C. Johnson and CH2M Hill, 1984, "Initial Assessment Study, Naval Weapons Station - NEESA, 13-044," C. C. Johnson and Associates, Inc., and CH2M Hill, July, 1984.

IT, 1994, "Waste Characterization and Disposal Report and Removal Action Work Plan - Mine Casings and Debris Removal, Combined Hazardous Waste, NWS Yorktown" IT Corporation, April, 1994.

Versar, 1991, Remedial Investigation/Feasibility Study for Sites 1-9, 11, 12, 16, 17, and 19, Naval Weapons Station, Yorktown, VA, Work Plan, Versar, Inc , May, 1991

VA, 1992, "Virginia Erosion Control and Sediment Handbook," Third Edition, Virginia Department of Conservation and Recreation, 1992.

Appendix A

QC Representative Letter of Appointment

July 21, 1994

Project No. 385013-ITGHA-00__

IT Corporation
2790 Mosside Boulevard
Monroeville, Pennsylvania 15146-2792

Contract No.: N47408-92-D-3045 - Combined Hazardous Waste
Delivery Order No.: 0005 - Battery and Drum Removal Action
Sites 2 and 9 and SSA4
Naval Weapons Station
Yorktown, Virginia

Letter of Appointment

Dear ____:

You have been appointed the Quality Control (QC) Representative for the Mine Casings and Debris Removal at Naval Weapons Station Sites 2 and 9 and SSA4 in Yorktown, Virginia. As the QC Representative for this delivery order you will be responsible for all IT quality-related activities as outlined in the Contract, Contract Quality Control Plan (CQCP), and Task-specific Quality Assurance Plan (TQAP). You will have access to all personnel and project records to perform your duties. You are granted authority to stop work activities, if in your opinion, nonconforming work will adversely impact the quality, performance requirements or regulatory compliance of the project. In your capacity as QC Representative, you will report directly to the Quality Assurance Manager, Construction and Remediation Division, or his designee.

Respectfully submitted,

IT CORPORATION

Raymond J. Pompe
Vice President
Construction and Remediation Division
Executive Sponsor - NEESA Program

Appendix B

Field Documentation Forms



INTERNATIONAL
TECHNOLOGY
CORPORATION

FIELD ACTIVITY DAILY LOG

DAILY LOG	DATE			
	NO.			
	SHEET	OF		

PROJECT NAME

PROJECT NO.

FIELD ACTIVITY SUBJECT:

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

VISITORS ON SITE:

CHANGES FROM PLANS AND SPECIFICATIONS, AND
OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS.

WEATHER CONDITIONS:

IMPORTANT TELEPHONE CALLS:

IT PERSONNEL ON SITE:

SIGNATURE

DATE:



DATE						
TIME						
PAGE ____ OF ____						
PAGE						
PROJECT NO.						

SAMPLE COLLECTION LOG

PROJECT NAME _____

SAMPLE NO. _____

SAMPLE LOCATION _____

SAMPLE TYPE _____

COMPOSITE _____ YES _____ NO

COMPOSITE TYPE _____

DEPTH OF SAMPLE _____

WEATHER _____

CONTAINERS USED

**AMOUNT
COLLECTED**

[illegible]

PREPARED BY: _____

COMMENTS: (Continued)		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">DATE</td> <td style="width: 10px;"></td> <td style="width: 10px;"></td> <td style="width: 10px;"></td> <td style="width: 10px;"></td> <td style="width: 10px;"></td> </tr> <tr> <td style="padding: 2px;">TIME</td> <td style="width: 10px;"></td> <td style="width: 10px;"></td> <td style="width: 10px;"></td> <td style="width: 10px;"></td> <td style="width: 10px;"></td> </tr> <tr> <td style="padding: 2px;">PAGE ____ OF ____</td> <td colspan="5"></td> </tr> <tr> <td style="padding: 2px;">PAGE</td> <td style="width: 10px;"></td> <td style="width: 10px;"></td> <td style="width: 10px;"></td> <td style="width: 10px;"></td> <td style="width: 10px;"></td> </tr> <tr> <td style="padding: 2px;">PROJECT NO.</td> <td colspan="5"></td> </tr> </table>	DATE						TIME						PAGE ____ OF ____						PAGE						PROJECT NO.					
DATE																																
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PAGE ____ OF ____																																
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PREPARED BY: _____

LEGEND

1. A SAMPLE COLLECTION LOG IS TO BE COMPLETED FOR EACH SAMPLE.
2. ALWAYS COMPLETE BOTH SIDES. IF SECOND SIDE IS NOT USED, DRAW A LINE THROUGH IT AND MARK N/A. FILL IN CONTROL BLOCK AND PREPARED BY.
3. ALL ENTRIES ON LOG ARE TO BE COMPLETED, IF NOT APPLICABLE MARK N/A.
4. DATE: USE MONTH/DAY/YEAR; I.E., 10/30/85
5. TIME: USE 24-HOUR CLOCK; I.E., 1835 FOR 6:35 P.M.
6. PAGE: EACH SAMPLE TEAM SHOULD NUMBER PAGE ____ OF ____ FOR THE DAY'S ACTIVITIES FOR ALL SHEETS PREPARED ON A SINGLE DAY, I.E., IF THERE ARE A TOTAL OF 24 PAGES (INCLUDING FRONT AND BACK) NUMBER 1 OF 24, 2 OF 24, ETC.
7. SAMPLE LOCATION: USE BORING OR MONITORING WELL NUMBER, GRID LOCATION (TRANSECT), SAMPLING STATION I.D., OR COORDINATE TO PHYSICAL FEATURES WITH DISTANCES. INCLUDE SKETCH IN COMMENT SECTION IF NECESSARY.
8. SAMPLE TYPE: USE THE FOLLOWING - SOIL; WATER (SURFACE OR GROUND); AIR (FILTERS, TUBES, AMBIENT, PERSONNEL); SLUDGE; DRUM CONTENTS; OIL; VEGETATION; WIPE; SEDIMENT.
9. COMPOSITE TYPE: I.E., 24-HOUR, LIST SAMPLE NUMBERS IN COMPOSITE, SPATIAL COMPOSITE.
10. DEPTH OF SAMPLE: GIVE UNITS, WRITE OUT UNITS SUCH AS INCHES, FEET. DON'T USE ' OR ''.
11. WEATHER: APPROXIMATE TEMPERATURE, SUN AND MOISTURE CONDITIONS.
12. CONTAINERS USED: LIST EACH CONTAINER TYPE AS NUMBER, VOLUME, MATERIAL (E.G., 2 - 1L GLASS; 4 - 40 ML GLASS VIAL; 1 - 400 ML PLASTIC; 1 - 3 INCH STEEL TUBE; 1 - 8 OZ. GLASS JAR).
13. AMOUNT COLLECTED: VOLUME IN CONTAINERS (E.G. 1/2 FULL).

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 405042
Page 1 of ____

Project Name/No. ¹ _____ Samples Shipment Date ⁷ _____
 Sample Team Members ² _____ Lab Destination ⁸ _____
 Profit Center No. ³ _____ Lab Contact ⁹ _____
 Project Manager ⁴ _____ Project Contact/Phone ¹² _____
 Purchase Order No. ⁶ _____ Carrier/Waybill No. ¹³ _____
 Required Report Date ¹¹ _____

Bill to: ⁵ _____
 Report to: ¹⁰ _____

ONE CONTAINER PER LINE

Sample ¹⁴ Number	Sample ¹⁵ Description/Type	Date/Time ¹⁶ Collected	Container ¹⁷ Type	Sample ¹⁸ Volume	Pre- ¹⁹ servative	Requested Testing ²⁰ Program	Condition on ²¹ Receipt	Disposal ²² Record No.

Special Instructions: ²³ _____

Possible Hazard Identification: ²⁴

Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal: ²⁵

Return to Client ☐ Disposal by Lab ☐ Archive _____ (mos.)

Turnaround Time Required: ²⁶

Normal ☐ Rush ☐

QC Level: ²⁷

I. ☐ II. ☐ III. ☐

Project Specific (specify): _____

1. Relinquished by ²⁸
(Signature/Affiliation)

Date: _____
Time: _____

1. Received by ²⁸
(Signature/Affiliation)

Date: _____
Time: _____

2. Relinquished by
(Signature/Affiliation)

Date: _____
Time: _____

2. Received by
(Signature/Affiliation)

Date: _____
Time: _____

3. Relinquished by
(Signature/Affiliation)

Date: _____
Time: _____

3. Received by
(Signature/Affiliation)

Date: _____
Time: _____

Comments: ²⁹ _____

White: To accompany samples

Yellow: Field copy

* See back of form for special instructions.



ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD (cont.)*

Reference Document No.^{3u} _____
Page ____ of ____

Project Name _____

Project No. _____

Samples Shipment Date _____

ONE CONTAINER PER LINE

[illegible]

White: To accompany samples

Yellow: Field copy

***See back of form for special instructions**



**INTERNATIONAL
TECHNOLOGY
CORPORATION**

FIELD WORK VARIANCE (FWV)

ORIGINATED BY: _____
DATE PREPARED: _____
AREA DESCRIPTION: _____
SITE QC REVIEW: _____
DATE REVIEWED: _____

PROJECT NAME/NO.: _____
DELIVERY ORDER NO.: _____
FWV NO.: _____
APPROVED BY: _____
APPROVAL DATE: _____

VARIANCE INITIATED BY: IT () CUSTOMER () USACE ()

DESCRIPTION OF WORK: (Furnish sufficient information to identify work on dwg.)

REFERENCE DRAWING & REVISION #:

REASON FOR WORK: ADDITION () DELETION () REVISION ()

IMPACT TO SCHEDULE:

COST ACCUMULATION NO.: _____

AS-BUILTS REQ'D.: _____

PURCHASE REQUISITIONS
REQUIRED: _____

VENDOR/SUBCONTRACTOR
REFERENCE P.O. NO.: _____

ATTACHMENTS ☐

Please follow Procedure #POM605
in the
PROJECT EXECUTION MANUAL

COPY DISTRIBUTION:
Originator
Project Manager
Site Administrator
Contract Administrator
Controls Manager
General Superintendent
Contract Administration (Pgh)
Manager Project Services (Pgh)

1	PROJECT NAME:	2	JOB NO.		
3	LOCATION:	4	DATE:	5	NCR NO.
6	DESCRIPTION OF NON-CONFORMANCES:				
<p>PREPARED BY: _____ DATE: _____ Quality Control Representative</p> <p>REVIEWED BY: _____ DATE: _____ Quality Control Manager</p>					
7	DISPOSITION:				
<p>RECOMMENDED BY: _____ DATE: _____</p> <p>REVIEWED BY: _____ DATE: _____ Quality Control Representative</p>					
8	ACTION VERIFICATION:				
<p>IMPLEMENTED BY: _____ DATE: _____</p> <p>VERIFIED BY: _____ DATE: _____ Quality Control Representative</p>					
9	NCR CLOSE-OUT				DATE: _____ Quality Control Manager



INTERNATIONAL
TECHNOLOGY
CORPORATION

Report No. _____

Date: _____

DAILY CONSTRUCTION QUALITY CONTROL REPORT

U.S. Navy
Contract No. N47408-92-D-3045
Delivery Order No. 0005

Project : Battery and Drum Removal Action
Proj. No.: 305915
Proj. Loc.: Naval Weapons Station, Yorktown, VA

WEATHER: () Clear () P. Cloudy () Cloudy Wind _____
Temperature: High _____ Low _____
Precipitation: Today _____ Previous Period (i.e. weekend) _____
Site Conditions: _____
Lost time Due to Inclement Weather: _____ %

PRIME CONTRACTOR/SUBCONTRACTORS AND AREAS OF RESPONSIBILITY/LABOR COUNT:

- a. _____
- b. _____
- c. _____
- d. _____
- e. _____
- f. _____

WORK PERFORMED: (Indicate location and description of work performed including equipment used. Refer to work performed by prime and/or subcontractors as previously designated by letter above.) _____

MATERIALS AND/OR EQUIPMENT DELIVERED: (Include a description of materials and/or equipment, quantity, and supplier.) _____

RESULTS OF SURVEILLANCE: (Include satisfactory work completed, or deficiencies with action to be taken.)

- a. Preparatory Inspection: _____
- b. Initial Inspection: _____

- c. Follow-up Inspection: _____

- d. Safety Inspection (Include safety violations and corrective actions taken): _____

QC TESTS PERFORMED AND RESULTS: (As required by scope and/or project plans.) _____

VERBAL INSTRUCTIONS RECEIVED OR GIVEN: (List any instructions received from government personnel or given by IT on construction deficiencies identified, required retesting, etc., and the corresponding action to be taken.)

CHANGED CONDITIONS/DELAYS/CONFLICTS ENCOUNTERED: (List any conflicts with the delivery order [i.e., scope and/or project plans], any delays to the project attributable to site and weather conditions, etc.)

MEETINGS: (List the meetings i.e., Health and Safety, Site Operations, Cost/Schedule, etc.)

VISITORS: (List name and affiliation).

REMARKS: (Any additional information pertinent to the project not defined by the previous entries.)

CONTRACTOR'S VERIFICATION : The above report is complete and correct.

IT QA/QC Representative

Date

APPENDIX C
ENVIRONMENTAL PROTECTION PLAN



**INTERNATIONAL
TECHNOLOGY
CORPORATION**

Project No. 385013
September 1994

Final Plan

Environmental Protection Plan Combined Hazardous Waste Mine Casings and Debris Removal Sites 2 and 9 and Site Screening Area 4

Naval Weapons Station Yorktown Yorktown, Virginia

Contract No. N47408-92-D-3045
Delivery Order No. 0016

Prepared for:

Naval Construction Battalion Center
Naval Facilities Engineering Command
NAVFAC Contracts Office, Code 2723, Building 90
Port Hueneme, California 93043-5000



Prepared by:

IT Corporation
2790 Mosside Boulevard
Monroeville, Pennsylvania 15146-2792

**Environmental Protection Plan
Mine Casings and Debris Removal
Sites 2 and 9 and Site Screening Area 4
Naval Weapons Station Yorktown
Yorktown, Virginia**

**Contract No. N47408-92-D-3045
Delivery Order No. 0008**

Prepared for:

**Naval Construction Battalion Center
Naval Facilities Engineering Command
NAVFAC Contracts Office, Code 2723, Building 90
Port Hueneme, California 93043-5000**

Prepared by:

**IT Corporation
2790 Mossie Boulevard
Monroeville, Pennsylvania 15146-2792**

September 1994

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Attachment A - Preconstruction Survey Form		
Attachment B - Erosion and Sediment Control Plan		

1.0 Introduction

This Environmental Protection Plan has been specifically developed to meet the requirements of performing work in a manner that protects the environment during the removal action.

Environmental protection, for the purposes of this project, is defined as maintaining the environment in its current state to the greatest extent possible during project construction, and the enhancement of the appearance of disturbed areas in their final condition. To accomplish this, consideration must be given to air pollution control, land resources management, waste management, noise control, and water pollution control. The IT Corporation (IT) Site Superintendent will verify that all work is performed in a manner that minimizes the polluting of air, water, or land resources and complies with appropriate federal and state regulations. The Project Manager will coordinate all land resources management, waste management, pollution control, and abatement activities with the Navy Technical Representative (NTR).

2.0 Preconstruction Condition Survey

Prior to the start of on-site construction activities, a preconstruction condition survey will be conducted to determine the preconstruction condition of landscape features, ground cover, shrubs, and trees in and immediately adjacent to the work areas, storage areas, and access routes. The survey will be conducted jointly by the IT Quality Control (QC) Representative and the NTR.

The survey form to be completed during the preconstruction condition survey is provided in Attachment A. Individual survey forms will be completed for separate areas of the site. Each form will be signed by IT and the NTR upon mutual agreement of its accuracy and completion. Photographs and/or video tapes can be taken during the survey to further document preconstruction conditions.

The NTR will identify all land resources to be preserved within the work area. The IT QC Representative will mark the areas that are to be preserved and provide protection as appropriate. Monuments and markers will be identified and protected before construction operations commence.

3.0 Air Pollution Control

All work associated with this project will be conducted in a manner that minimizes the release of organic vapors, toxic gases, and dust. Real-time air monitoring will be conducted in the active work areas, at the project site perimeter, and at designated off-site locations to document worker exposure and to monitor the potential for off-site releases of pollutants. Monitoring will be initiated whenever the work activities create a potential for exposure and/or whenever the required respiratory protection is Level B or Level C. No on-site burning of waste material will be conducted during this project.

3.1 Air Monitoring Plan

Real-time air quality monitoring for volatile organic compounds (VOC) and particulates will be conducted both on and off site. This monitoring will consist of personnel, work area, and perimeter monitoring. An Air Monitoring Plan has been developed for this project which describes the types and locations of samples to be collected, the sampling and analytical equipment to be utilized, the target analytes, the action levels and noncompliance response actions, and the air monitoring quality assurance (QA)/QC program. This plan has been incorporated into the site Health and Safety (H&S) Plan.

3.2 Air Pollution Control and Response

Construction activities associated with this project may result in the release of respirable particulates and VOCs. The work procedures will be designed to prevent and minimize these releases. Additionally, action levels have been developed for the initiation of control and/or response activities.

Background air concentrations for VOCs and particulates will be established on a daily basis. If real-time air monitoring for these constituents indicates levels are greater than the action levels at the downwind site perimeter, control and response activities will be initiated for abatement of the on-site source of the air pollution as detailed in the site H&S plan.

Control for fugitive particulates will involve dust control measures such as the use of calcium chloride, magnesium chloride, or other standard manufacturer's products in accordance with American Society for Testing and Materials (ASTM) D8. Other dust suppressants may be applied. Water will not be used if it results in hazardous or objectionable conditions such as ice, flooding or pollution.

4.0 Land Resources Management

All construction activities associated with this project will be conducted in a manner to minimize impacts to land resources within and outside the project boundaries. In particular, damage to trees and shrubs and to native wildlife habitat will be minimized to the maximum extent possible. All project activities will be coordinated with the NTR to minimize impacts to land resources. Areas to be cleared and grubbed in order to perform and support construction activities will be designated during the initial site surveys and delineated on a site plan. Topsoil from areas to be disturbed will be stripped and stockpiled for reuse during site restoration activities. Areas which have been impacted by the project will be restored, as much as is practical, to match their original condition.

4.1 Historical and Archaeological Finds

Any and all items discovered during construction which may have an apparent historical or archaeological interest will be carefully preserved in an undisturbed state. The Site Superintendent will immediately report the find to the NTR so that proper authorities may be notified.

4.2 Survey Monuments and Markers

All survey monuments and markers found within the boundaries of the project site will be marked with lath and flagging prior to the start of construction to provide adequate visible site identification. Additionally, all survey monuments found within the project site area will be properly surveyed and referenced prior to the start of construction. This will enable the replacement of any monuments if they are disturbed during project activities.

4.3 Field Office, Staging, and Laydown Areas

All trailers, staging, laydown, and parking areas will be located on the project site at approximate locations as shown on Figures 1, 2 and 3 of the Removal Action Work Plan. Proposed locations and the construction details will be formalized by mutual agreement of IT's Site Superintendent and the NTR.

4.4 Stockpiles and Temporary Construction Roads

The locations of temporary laydown areas and construction roads will be decided by mutual agreement of IT's Site Superintendent and the NTR.

4.5 Protection of Trees and Shrubs

IT will conduct construction activities so that trees and shrubs lying outside areas designated for clearing will not be defaced, injured, or destroyed. IT will provide temporary protection for trees, consisting of placing wooden barricades around them, if there is a possibility for injury caused by use of construction equipment and machinery.

4.6 Protection of Wildlife Resources

IT will perform all work and take actions to minimize interference with, or disturbance of, wildlife. Natural water flows and wildlife habitat areas outside the project sites will remain undisturbed. Any trees and brush generated during clearing and grubbing of the sites will be placed in piles and utilized as wildlife shelters. These shelters will be left on site after demobilization.

4.7 Restoration of Landscape Damage

All areas damaged or otherwise altered by activities associated with this project will be restored, as much as practical, to near current conditions. Restoration will be as directed by the NTR in accordance with the contract documents. Trees damaged during the project will be restored, if possible, or replaced with nursery-grown trees of the same species as the damaged tree and of a size that is satisfactory to the NTR. All disturbed turf areas will be reclaimed by revegetating.

The reclamation of all areas affected by construction activities such as the field office area, decontamination area, and temporary staging/laydown areas, will be regraded to match adjacent areas. Reclamation of temporary site access roads will include smoothing and grading to eliminate ruts and to match the contours of the adjacent areas. Eroded or caved slopes of cuts or embankments will be trimmed and smoothed to provide a stable condition and adequate drainage. Revegetation of all disturbed areas including wetlands will be performed in accordance with the contract documents.

5.0 Waste Management

Wastes, both hazardous and nonhazardous, will be generated by activities associated with project activities. These wastes will be properly managed to mitigate environmental impacts and comply with applicable regulations. All disposal activities will be conducted in accordance with the requirements of the contract documents.

5.1 Hazardous Waste Disposal

Solid wastes, which will be handled as hazardous, include personal protective clothing and drummed hazardous waste. The disposable protective clothing will be drummed and disposed of with the drummed hazardous waste in accordance with the Virginia Hazardous Waste Management Regulations (10 VHWMR 672.3.5-9).

5.2 Nonhazardous Waste Disposal

The nonhazardous wastes expected to be generated from the construction activities include drummed nonhazardous wastes, unexploded ordnance (UXO), construction/demolition debris, railroad ties, batteries, and decontamination wastewater. The nonhazardous wastes will be handled in the following manner: the drummed nonhazardous wastes will be disposed of in a permitted sanitary landfill site as nonhazardous waste; the inert UXO will be processed and delivered to the Defense Reutilization and Marketing Office (DRMO) for disposal and recycling; the construction/demolition debris will be disposed of in a permitted construction/demolition debris landfill; the railroad ties from Sites 2 and 9 will be placed in roll-off container(s) and transported to the on-site storage facility, the carbon zinc batteries at Site 2 will be removed as part of the removal actions at Sites 4, 16 and 21 and disposed in accordance with the Removal Action Work Plan for Battery and Drum Removal at Sites 4, 16, and 21, dated February 1994; the decontamination wastewater will be pumped to a holding tank prior to being disposed of off-site as either hazardous or nonhazardous liquid waste according to the toxicity characteristic leaching procedure (TCLP) and information collection request (ICR) analysis of the liquid.

6.0 Water Pollution Control

All project activities will be conducted in a manner to prevent the discharge of pollutants into adjacent waterways. Control and/or disposal facilities will be utilized properly and maintained adequately to comply with applicable contract specifications. All toilet facilities will be of the chemical type and disposal of wastes will be to an off-site facility. No toilet facilities will be located in the Exclusion Zone.

If necessary, fuel will be stored in tanks and oil will be stored in barrels. Any generators in use will be equipped with drip pans to prevent spills. Special precaution will be taken to prevent the contamination of groundwater or surface water from a fuel or oil spill.

7.0 Soil Erosion and Sediment Control

Because of the nature of the site and the level of construction activities, it is not anticipated that erosion control will present any significant problems; however, an Erosion and Sediment Control Plan has been prepared in accordance with the Virginia Soil and Water Conservation Commission (VSWCC) and Virginia Erosion and Sediment Control Handbook (VESCH) and has been included as Attachment B to this plan. A brief description of the erosion and sediment control measures to be implemented during project performance follows. Detailed erosion and sediment control techniques are also presented in the Removal Action Work Plan.

A stabilized temporary construction entrance combined with an equipment decontamination pad will be constructed at each site to prevent tracking of dirt and mud onto Naval Weapons Station (NWS) Yorktown roadways. The construction entrance may require periodic cleaning to remove accumulated sediment and/or application of a top dressing with additional gravel as conditions demand.

Erosion and sedimentation control structures such as hay bales and silt fence will be installed along the perimeter of each site, downgradient of any disturbed areas, as well as around any temporary soil stockpiles. The installation procedures for hay bales and silt fence are presented in Section 3.4.4.3 of the Removal Action Work Plan. If necessary, diversion dikes or ditches will be installed and grading conducted to control sediment migration.

Special care will be taken while performing the removal action at Site 2 in close proximity to Felgates Creek to minimize sediment entering the creek. If deemed necessary by the Site Superintendent, low ground pressure (LGP) equipment will be used in and adjacent to the wetlands along the creek to minimize potential disturbance to the area. Upon completion of waste removal, the disturbed areas will be finished graded, a 4-inch layer of topsoil will be applied, and the areas revegetated as outlined in Section 3.4.7.5 of the Removal Action Work Plan. Finally, all slopes will be permanently stabilized with the installation of erosion control matting.

All erosion and sediment control measures will be properly maintained throughout the duration of the project. In all cases, the area of bare soil exposed at any given time by construction activities will be kept to a minimum and reseeding initiated as soon as possible to minimize erosion potential.

8.0 Noncompliance/Corrective Action

Upon written notification from the NTR of any noncompliance with federal and state laws and regulations, IT's Site Superintendent will immediately initiate actions to correct the noncompliance situation. The Site Superintendent will inform the NTR in writing of the proposed corrective actions and will verify that the actions are implemented immediately and effectively. After the noncompliant situation has been eliminated, the Site Superintendent will send written notification to the NTR of the results of the corrective action.

9.0 Postconstruction Cleanup

Upon project completion and subject to instructions by the NTR, IT will remove all temporary construction facilities, stockpiles of excess material, and any other vestiges of construction activity. As directed by the NTR, disturbed areas will be regraded and seeded in accordance with the construction specifications to return them to their preconstruction condition.

ATTACHMENT A
PRECONSTRUCTION SURVEY FORM

PRECONSTRUCTION SURVEY FORM

I. GENERAL INFORMATION

Date of Survey: _____ Time: _____

Survey Conducted By: _____
(Name) (Affiliation)

Accompanied By: _____
(Name) (Affiliation)

Weather Conditions:

II. SURVEY LOCATION

Indicate the section of the site covered by the survey. Provide a verbal description below:

[illegible]

III. VEGETATION

A. Ground Cover:

Type _____

Maturity _____

Density _____

Condition _____

Other _____

B. Shrubs:

Type _____

Maturity _____

Density _____

Condition _____

Other _____

C. Trees:

Type _____

Maturity _____

Density _____

Condition _____

Other _____

D. Landscape Features:

Type _____

Maturity _____

Density _____

Condition _____

Other _____

IV. ADDITIONAL OBSERVATIONS (Air and water quality, fish and wildlife, soil, historical, archaeological and cultural resources)

V. SURVEY COMPLETION

I, _____, certify that this Preconstruction Condition Survey Form has been completed as accurately and as practical as possible.

(Signature)

(Date)

(Affiliation)

I, _____, certify that this Preconstruction Condition Survey Form has been completed as accurately and as practical as possible.

(Signature)

(Date)

(Affiliation)

ATTACHMENT B

EROSION AND SEDIMENT CONTROL PLAN

**Erosion and Sediment Control Plan
Mine Casings and Debris Removal
Sites 2 and 9 and Site Screening Area 4
Naval Weapons Station Yorktown
Yorktown, Virginia**

**Contract No. N47408-92-D-3045
Delivery Order No. 0008**

Prepared for:

**Naval Construction Battalion Center
Naval Facilities Engineering Command
NAVFAC Contracts Office, Code 2723, Building 90
Port Hueneme, California 93043-5000**

Prepared by:

**IT Corporation
2790 Mosside Boulevard
Monroeville, Pennsylvania 15146-2792**

September 1994

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2	Site 9 Erosion and Sediment Control Plan
3	Site Screening Area 4 Erosion and Sediment Control Plan
4	Site 2 Erosion and Sediment Control Plan Layout
5	Site 9 Erosion and Sediment Control Plan Layout
6	Site Screening Area 4 Erosion and Sediment Control Plan Layout
7	Erosion and Sediment Control Details

CHECKLIST**FOR EROSION AND SEDIMENT CONTROL PLANS**

✓ **Minimum Standards** - All applicable Minimum Standards must be addressed.

NARRATIVE

✓ **Project description** - Briefly describes the nature and purpose of the land-disturbing activity, and the area (acres) to be disturbed.

✓ **Existing site conditions** - A description of the existing topography, vegetation and drainage.

✓ **Adjacent areas** - A description of neighboring areas such as streams, lakes, residential areas, roads, etc., which might be affected by the land disturbance.

✓ **Off-site areas** - Describe any off-site land-disturbing activities that will occur (including borrow sites, waste or surplus areas, etc.). Will any other areas be disturbed?

✓ **Soils** - A brief description of the soils on the site giving such information as soil name, mapping unit, erodibility, permeability, depth, texture and soil structure.

✓ **Critical areas** - A description of areas on the site which have potentially serious erosion problems (e.g., steep slopes, channels, wet weather/underground springs, etc.).

✓ **Erosion and sediment control measures** - A description of the methods which will be used to control erosion and sedimentation on the site. (Controls should meet the specifications in Chapter 3.)

✓ **Permanent stabilization** - A brief description, including specifications, of how the site will be stabilized after construction is completed.

NA **Stormwater runoff considerations** - Will the development site cause an increase in peak runoff rates? Will the increase in runoff cause flooding or channel degradation downstream? Describe the strategy to control stormwater runoff.

NA **Calculations** - Detailed calculations for the design of temporary sediment basins, permanent stormwater detention basins, diversions, channels, etc. Include calculations for pre- and post-development runoff.

Checklist (continued)

SITE PLAN

- ✓ Vicinity map - A small map locating the site in relation to the surrounding area. Include any landmarks which might assist in locating the site.
- ✓ Indicate north - The direction of north in relation to the site.
- ✓ Limits of clearing and grading - Areas which are to be cleared and graded.
- ✓ Existing contours - The existing contours of the site.
- NA Final contours - Changes to the existing contours, including final drainage patterns.
- ✓ Existing vegetation - The existing tree lines, grassed areas, or unique vegetation.
- Soils - The boundaries of different soil types.
- ✓ Existing drainage patterns - The dividing lines and the direction of flow for the different drainage areas. Include the size (acreage) of each drainage area.
- ✓ Critical erosion areas - Areas with potentially serious erosion problems. (See Chapter 6 for criteria.)
- ✓ Site Development - Show all improvements such as buildings, parking lots, access roads, utility construction, etc.
- ✓ Location of practices - The locations of erosion and sediment controls and stormwater management practices used on the site. Use the standard symbols and abbreviations in Chapter 3 of this handbook.
- NA Off-site areas - Identify any off-site land-disturbing activities (e.g., borrow sites, waste areas, etc.). Show location of erosion controls. (Is there sufficient information to assure adequate protection and stabilization?)
- ✓ Detail drawings - Any structural practices used that are not referenced to the E&S handbook or local handbooks should be explained and illustrated with detail drawings.
- ✓ Maintenance - A schedule of regular inspections and repair of erosion and sediment control structures should be set forth.

1.0 Project Description

The purpose of this project is the removal of unexploded explosive ordnance (UXO) and debris from Site 2 (Turkey Road landfill), Site 9 (Plant 1 Explosives-Contaminated Wastewater Discharge Area), and Site Screening Area 4 (SSA4) at Naval Weapons Station (NWS) Yorktown in Yorktown, Virginia. The sites are located at three different locations within NWS Yorktown. A total of approximately 2.2 acres will be disturbed during remediation (.6 acres of Site 2, .3 acres of Site 9, and 1.3 acres of SSA4).

2.0 Existing Site Conditions

Site 2, Turkey Road Landfill. This site was formerly a 5-acre landfill which began operations in the 1940 and continued until 1981 when it was closed. A clay cap was constructed over the area and revegetated accordingly. The larger, central portion of the site is relatively flat and drains to the north where the east and west branches of Felgates Creek intersect. The eastern, western, and northern boundaries of the site consist of 5 to 40 percent slopes adjacent to the east and west branches of Felgates Creek. UXO and miscellaneous debris have been indiscriminately dumped and scattered along these slopes which are intermingled with trees up to 18-inches in diameter and dense undergrowth. The central portion of the site is sparsely to moderately vegetated. The UXO/debris disposal area near the site entrance is relatively flat with woods consisting of oaks and pines up to 18-inches in diameter and sparse to moderate undergrowth. This area also has a few larger trees up to 36-inches in diameter. Several drainage swales intersect the slopes along the eastern and western perimeter of the landfill.

Site 9, Plant 1 Explosives-Contaminated Wastewater Discharge Area. This site was used from the 1930s to 1975 as a drainageway for explosives-contaminated washwaters and possibly substantial quantities of organic solvents from nearby Plant 1. The site consists of two small areas separated by Collman Road which runs north to south. The waste disposal area east of Collman Road contains a stockpile of railroad ties dumped onto the embankment and numerous mine casings at the toe of the slope. The waste disposal area west of Collman Road contains several UXO at the toe of the slope and another piece of UXO approximately 25 feet away. Both areas are directly adjacent to the intermittently flowing unnamed tributary to Lee Pond. A 36-inch diameter reinforced concrete pipe traverses Collman Road with the

inlet and outlet located near the east and west waste disposal areas, respectively. The embankments on either side of the roadway have slopes of 13 to 40 percent and are wooded consisting of small pines and oaks up to 18 inches in diameter with sparse to moderate undergrowth. A few larger trees up to 36 inches in diameter are also present. The roadsides above the waste disposal area are relatively flat and drain to the nearby slopes. An abandoned railroad line intersects the western roadside.

Site Screening Area 4, Weapons Casing Disposal Area. This site is located southeast of the intersection of Bypass and Main Roads. The site was formerly a small ravine which had been filled to construct Bypass Road and a railroad. The northeast embankment was apparently used to dispose of miscellaneous construction/demolition debris, drums, and UXO. The majority of the waste is found either protruding or lying along the northeast embankment which has a 60 percent slope. The top of the embankment begins at the treeline and ends approximately 100 feet away at the 24-inch diameter RCP outlet. Some scattered UXO and drums are located along the initial segment of the unnamed tributary to Roosevelt Pond. The site consists of woods which are generally small pines and oaks up to 18 inches in diameter and several hardwoods up to 36 inches in diameter with sparse to moderate undergrowth. A relatively flat grassy field lies between Bypass Road and the site, which drains to the northeast embankment.

3.0 Adjacent Property

Site 2, Turkey Road Landfill. All of the property surrounding Site 2 is part of NWS Yorktown, which is owned and operated by the government. Turkey Road borders the property to the south while Felgates Creek encompasses the site to the east, west, and north. No structures exist in the vicinity.

Site 9, Plant 1 Explosives-Contaminated Wastewater Discharge Area. All of the property surrounding Site 9 is part of NWS Yorktown, which is owned and operated by the government. The site is bounded by Lee Pond to the west and by woods to the north, south, and east. Collman Road intersects the site in a north to south fashion.

Site Screening Area 4, Weapon Casings Disposal Area. All of the property surrounding SSA4 is part of NWS Yorktown, which is owned and operated by the

government. The grass field next to Bypass Road borders the site to the west while woods bound SSA4 to the north, south, and east.

4.0 Off-Site Areas

There will be no off-site land-disturbing activities occurring during performance of this project.

5.0 Soils

Site 2, Turkey Road Landfill. No soils information is available.

Site 9, Plant 1 Explosives-Contaminated Wastewater Discharge Area. The soils at Site 9 consist of interbedded silts and silty sands.

Site Screening Area 4, Weapon Casings Disposal Area. No soils information is available.

6.0 Critical Areas

Site 2, Turkey Road Landfill. The critical areas for Site 2 have been identified on Figure 1. The embankments around the perimeter of the landfill have been designated as critical due to their close proximity to Felgates Creek. This creek has areas of nontidal wetland vegetation which would experience serious degradation if sediment were to leave the site. Therefore, care will be taken to minimize land disturbance in this area, and sediment will be trapped on the site.

Site 9, Plant 1 Explosives-Contaminated Wastewater Discharge Area. The critical areas for Site 9 have been identified on Figure 2. The critical areas for Site 9 include the embankments on the east and west sides of Collman Road and contiguous UXO disposal areas due to their proximity to the intermittent unnamed tributary which empties into Lee Pond.

Site Screening Area 4, Weapons Casing Disposal Area. The critical areas for SSA4 have been identified on Figure 3. The critical areas for SSA4 consist of the long, steep embankment and contiguous waste disposal areas due to their proximity to the intermittent unnamed tributary to Roosevelt Pond.

7.0 Erosion and Sedimentation Control Measures

Unless otherwise indicated, all vegetative and structural erosion and sediment control practices will be constructed and maintained according to minimum standards and specifications of the Virginia Erosion and Sediment Control Handbook.

7.1 Structural Practices

Silt Fence Barrier. Silt fence sediment barriers will be installed downslope of areas with minimal grades to filter sediment-laden runoff from sheet flow as indicated on Figures 4, 5, and 6. A construction detail is shown on Figure 7.

Tree Protection. A fence barrier will be placed around the trees and vegetated areas which will not be disturbed to protect the trees and other vegetation from construction equipment and soil compaction.

Temporary Construction Entrance. At Site 2 and 9 and SSA4, a temporary construction entrance with an equipment decontamination padwash will be installed where the access area intersects with Turkey Road, Collman Road, and Bypass Road, respectively. During muddy conditions, drivers of constructions will be required to wash their wheels before entering NWS Yorktown roadways. The locations of the construction entrances are presented on Figures 4, 5, and 6. Figure 7 presents a construction detail.

7.2 Vegetative Practices

Topsolling. Topsoil will be obtained from an off-base borrow source. Upon completion of site grading operations, a 4-inch layer of topsoil will be applied to all disturbed areas.

Temporary Seeding. All denuded areas which will be left dormant for extended periods of time will be seeded with fast germinating temporary vegetation immediately following grading. Selection of seed mixture will be dependent on the time of year it is applied.

Erosion Control Blankets. Erosion control blankets will be installed over slopes which have been brought to final grade and have been seeded to protect the slopes from rill and gully erosion and to allow the seed to germinate properly. Mulch (straw or fiber) will be used on relatively flat areas and will be applied as a second step in the seeding procedure.

8.0 Management Strategies

The following erosion and sediment control management strategies will be implemented during performance of this project:

- Construction will be sequenced so that grading operations can begin as quickly as possible.
- Temporary seeding or their stabilization will follow immediately after grading.
- Areas which are not to be disturbed will be clearly marked by flags, signs, etc.
- The site superintendent will be responsible for the installation and maintenance of all erosion and sediment control practices.
- After achieving adequate stabilization, the temporary erosion and sediment controls will be cleaned up and removed, and the sediment.

9.0 Permanent Stabilization

All areas disturbed by construction will be stabilized with permanent seeding immediately following finish grading. Initially, a minimum of 4 inches of topsoil will be placed over the disturbed areas. Topsoil will consist of natural, friable, soil representative of productive, well-drained soils in the area and is free of subsoil, stumps, rocks larger than 1 inch, brush, weeds, toxic substances and other material detrimental to plant growth. The topsoil will be amended, as necessary, with lime to obtain a pH between the range of 5.5 to 7. The topsoil will be scarified to loosen the upper 3 inches and the areas will be revegetated as described in the following and in accordance with Section 3.4.7 of the Removal Action Work Plan. The seed used will be consistent with existing vegetation and will be placed at a rate of 5 pounds

per 1,000 square feet. Fertilizer consisting of FS-0-241, Type I, Class 2, 10-10-10 analysis will be applied to assist in the germination of the seed and to minimize erosion. Erosion control blankets will be installed over slopes which have been brought to final grade and have been seeded to protect the slopes from rill and gully erosion and to allow the seed to germinate properly. Mulch (straw and fiber) will be used on relatively flat areas. In all seeding operations, seed, fertilizer, and lime will be applied prior to mulching.

10.0 Stormwater Management

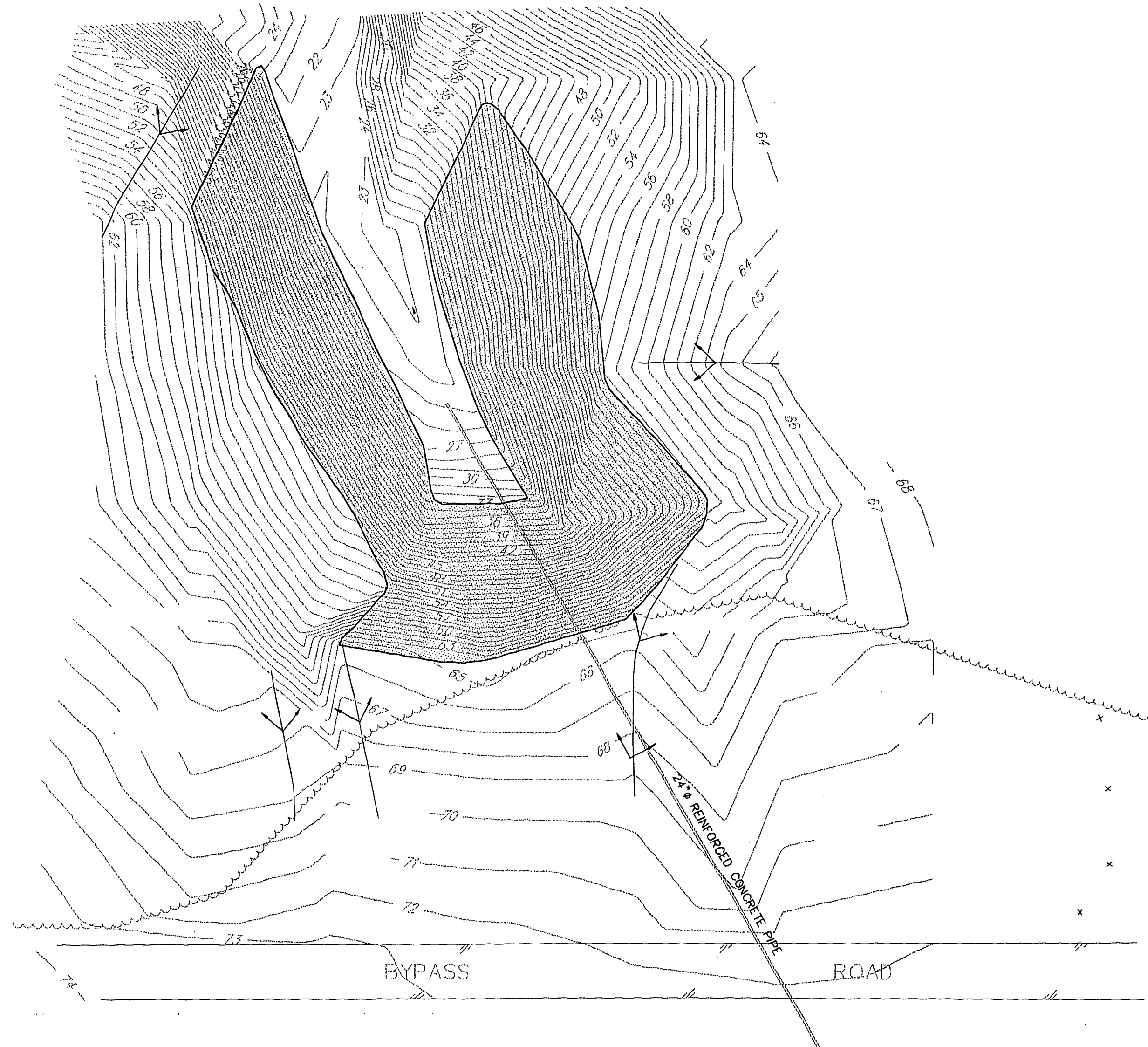
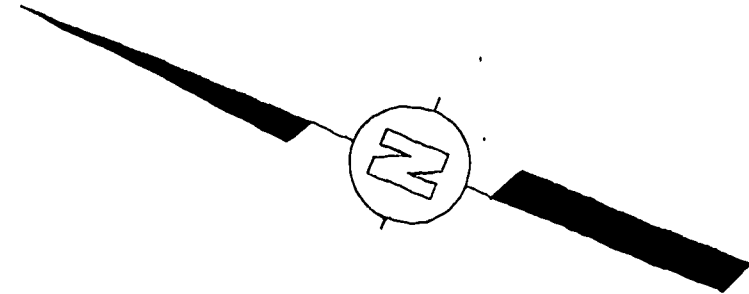
No stormwater management provisions have been incorporated into this plan.

11.0 Maintenance

In general, all erosion and sediment control measures will be checked daily and after each significant rainfall. The following items will be inspected, in particular:

- The silt fence barrier will be checked regularly for undermining or deterioration of the fabric. Sediment will be removed when the level of sediment deposition reaches half way to the top of the barrier.
- The seeded areas will be checked regularly to ensure that a good stand is maintained. Areas should be fertilized and reseeded as needed.

FIGURES



LEGEND:

- EXISTING GROUND SURFACE CONTOUR
- TEMPORARY BENCH MARK RAILROAD SPIKE IN POWER POLE NO. 25-ELEVATION 73.87 FT. MSL
- WOODS
- ASPHALT ROAD
- CRITICAL AREA
- DRAINAGE DIVIDE

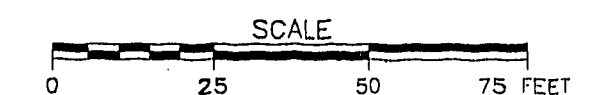


FIGURE 3

NAVAL CONSTRUCTION BATTALION CENTER
NAVAL FACILITIES ENGINEERING COMMAND
PORT HUENEME, CALIFORNIA

TITLE
SITE SCREENING AREA 4
EROSION AND SEDIMENT CONTROL PLAN
WEAPONS CASING DISPOSAL AREA
MINE CASINGS AND DEBRIS REMOVAL
NAVAL WEAPONS STATION YORKTOWN
YORKTOWN, VIRGINIA



INTERNATIONAL
TECHNOLOGY
CORPORATION

... Creating a Safer Tomorrow

DESIGNED BY	DS	CHECKED BY	DS	10/3/94	SHEET
DRAWN BY	RJC	APPROVED BY	HD	10/3/94	
DATE	21 SEPT. 94	DRAWING NO.	385013-E2		

REFERENCE:
SURVEY BY MILLER-STEPHENSON & ASSOCIATES,
P.C. VIRGINIA BEACH, VIRGINIA; MARCH 1994.

REVISION	DATE	BY	CHK'D	APR'VD	DESCRIPTION
1	9-21-94				NEW INFORMATION/REVISIONS PER NAVY REVIEW

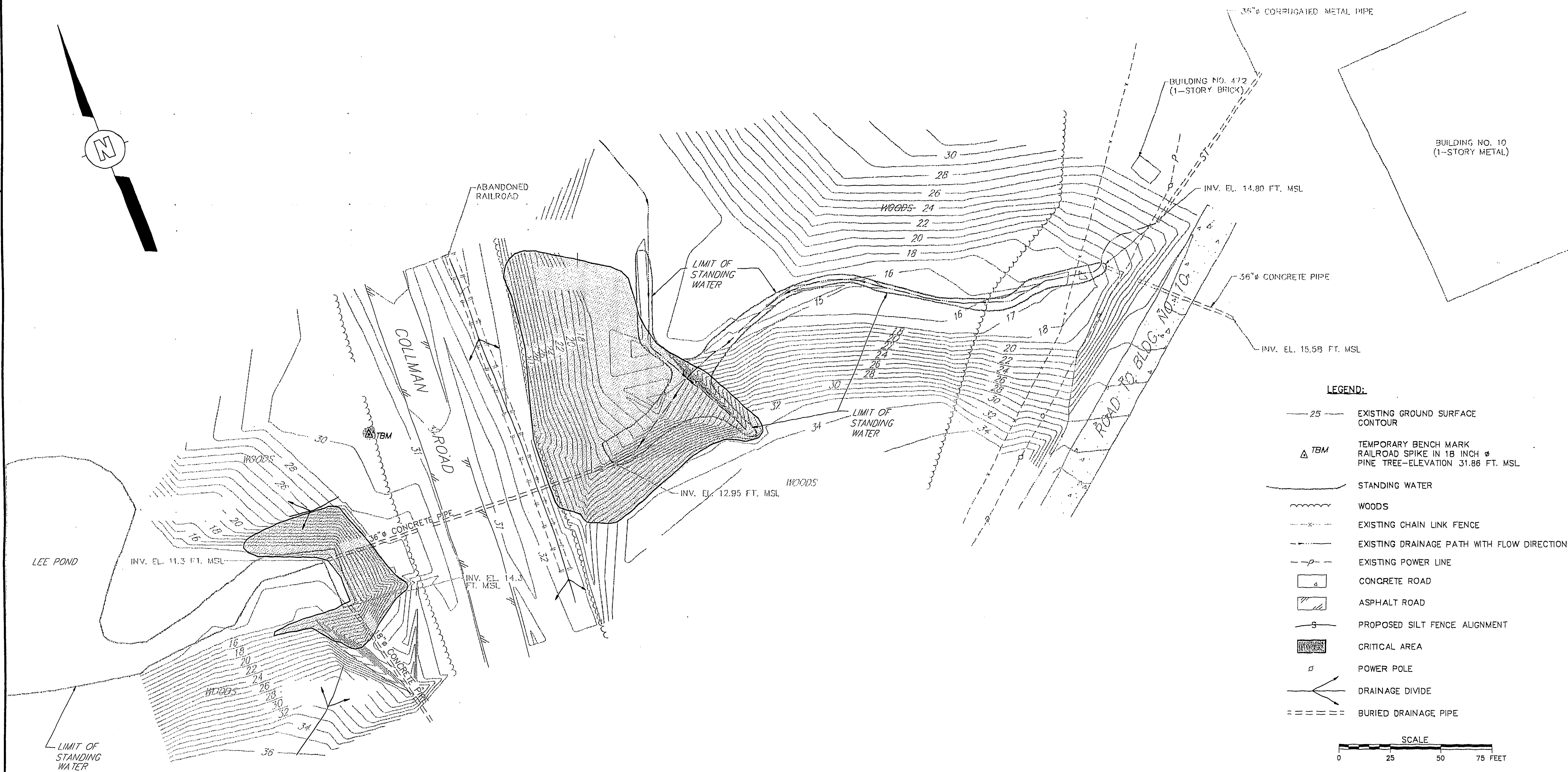


FIGURE 2

NAVAL CONSTRUCTION BATTALION CENTER
NAVAL FACILITIES ENGINEERING COMMAND
PORT HUENEME, CALIFORNIA

TITLE	SITE 9 EROSION AND SEDIMENT CONTROL PLAN EXPLOSIVES CONTAMINATED WASTEWATER AREA MINE CASINGS AND DEBRIS REMOVAL NAVAL WEAPONS STATION YORKTOWN YORKTOWN, VIRGINIA
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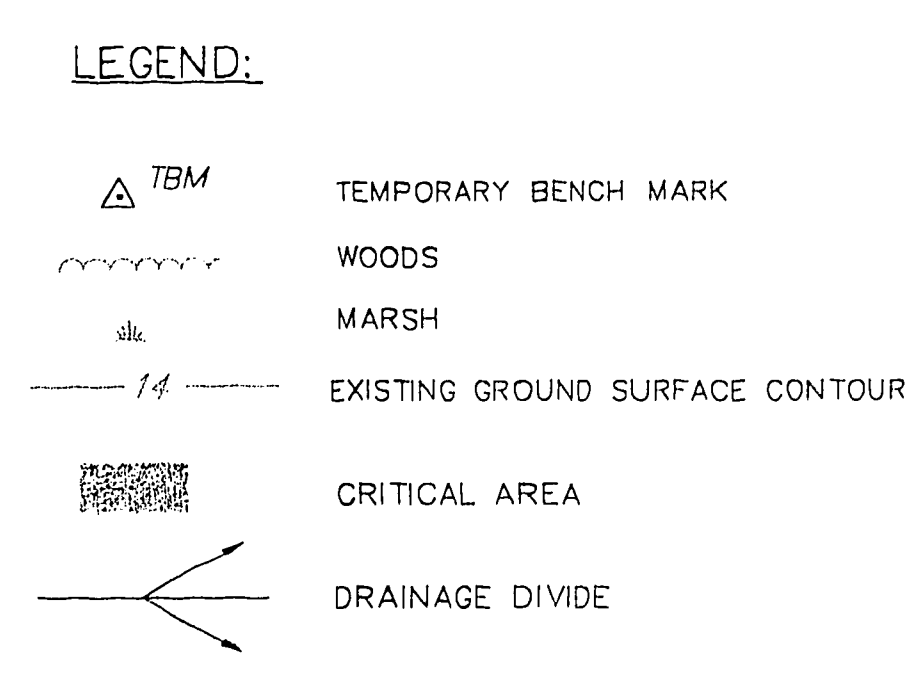
INTERNATIONAL
TECHNOLOGY
CORPORATION

... *Creating a Safer Tomorrow*

DESIGNED BY	DS	CHECKED BY	PCS	10/3/94	SH
DRAWN BY	RJC	APPROVED BY	HD	10/3/94	
DATE	20 SEPT. 94	DRAWING NO.	385013-E1		

REFERENCE:
SURVEY BY MILLER-STEPHENSON & ASSOCIATES
P.C. VIRGINIA BEACH, VIRGINIA; MARCH 1994

[illegible]



TITLE	SITE 2 EROSION AND SEDIMENT CONTROL PLAN TURKEY ROAD LANDFILL MINE CASINGS AND DEBRIS REMOVAL NAVAL WEAPONS STATION YORKTOWN YORKTOWN, VIRGINIA
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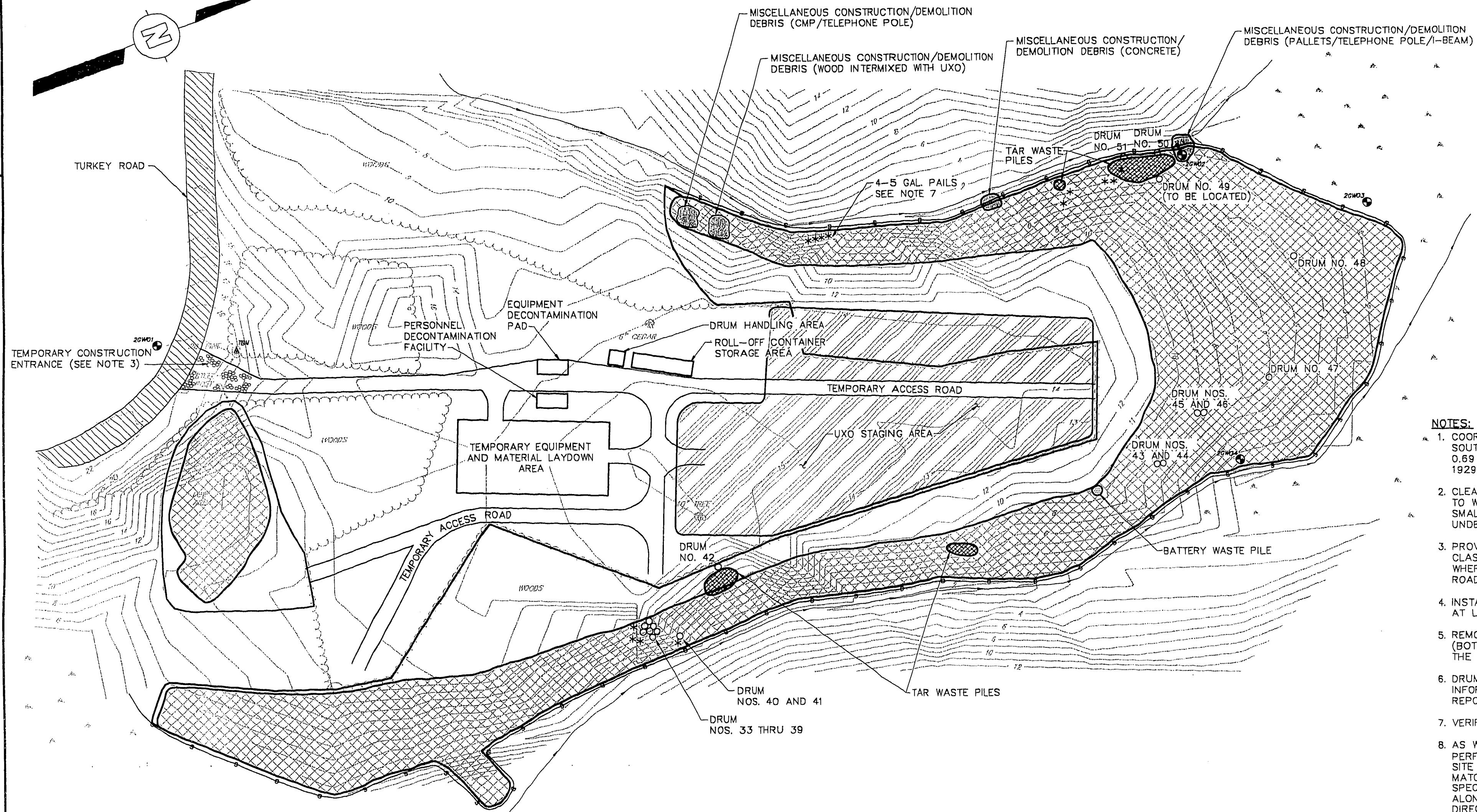
**INTERNATIONAL
TECHNOLOGY
CORPORATION**

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DESIGNED BY	DS	CHECKED BY	DS	10/3/94	SHEET
DRAWN BY	RJC	APPROVED BY	HD	10/3/94	
DATE	21 SEPT. 94	DRAWING NO.	385013-E3		


[illegible]


REFERENCE:
SURVEY BY MILLER-STEPHENSON & ASSOCIATES,
P.C. VIRGINIA BEACH, VIRGINIA; MARCH 1994





WASTE CHARACTERIZATION INFORMATION		
WASTE STREAM	DRUM I.D. NUMBER(S)	VISUAL DESCRIPTION
WP-003	42, 47, 48, 49, 50, AND 51	TAR
WP-004	33, 34, 35, 36, 37, 38, AND 45	FIBER MATERIAL


LEGEND:


-  TEMPORARY BENCH MARK, RAILROAD SPIKE IN 18 INCH
 DIAMETER PINE TREE — ELEVATION 31.86 FT. MSL


 WOODS


 APPROXIMATE LOCATION OF MISCELLANEOUS CONSTRUCTION/
 DEMOLITION DEBRIS


 APPROXIMATE LIMITS OF WASTE DISPOSAL AREAS


 EXISTING DRAINAGE PATH WITH FLOW DIRECTION


 ASPHALT ROAD


 MARSH


 PROPOSED SILT FENCE ALIGNMENT


 EXISTING GROUND SURFACE CONTOUR

 APPROXIMATE ASPHALT WASTE PILE AREAS

 APPROXIMATE BATTERY WASTE PILE AREA

 UNNUMBERED 5 OR 30 GALLON EMPTY DRUM

 APPROXIMATE DRUM LOCATION

 APPROXIMATE LIMITS OF CLEARING AND GRUBBING

NOTES:

1. COORDINATES ARE BASED ON VIRGINIA STATE PLANE COORDINATE SYSTEM, SOUTH ZONE. ELEVATIONS ARE BASED ON STATION DATUM, WHICH IS 0.69 FEET BELOW THE NATIONAL GEODETIC VERTICAL SATUM (NGVD) OF 1929 (1972 ADJUSTMENT), MSL=0.00.
2. CLEAR, CRUB, AND CHIP TREES, BRUSH, AND GRASSES IN AND ADJACENT TO WORK AREAS, AS NECESSARY. EXISTING WOODS ARE GENERALLY SMALL PINES AND OAKS UP TO 18 INCH DIAMETER WITH SPARSE TO MODERATE UNDERGROWTH, WITH A FEW LARGER TREES UP TO 36 INCH DIAMETER.
3. PROVIDE TEMPORARY CONSTRUCTION ENTRANCE WITH 12 INCH DIAMETER CLASS III REINFORCED CONCRETE STORM DRAIN PIPE AT ALL LOCATIONS WHERE THE TEMPORARY CONSTRUCTION ENTRANCE CROSSES ROADSIDE DITCHES.
4. INSTALL EROSION AND SEDIMENTATION CONTROL MEASURES AS SPECIFIED AT LOCATIONS SHOWN.
5. REMOVE UXO, CONSTRUCTION/DEMOLITION DEBRIS, RAILROAD TIES, DRUMS (BOTH NUMBERED AND UNNUMBERED), AND BATTERIES AS SPECIFIED IN THE REMOVAL ACTION WORK PLAN.
6. DRUM NUMBERS IDENTIFIED BY METAL TAGS. FOR ADDITIONAL DRUM INFORMATION SEE TABLE 1 OF WASTE CHARACTERIZATION AND DISPOSAL REPORT AND REMOVAL ACTION WORK PLAN.
7. VERIFY EMPTY PRIOR TO DISPOSAL.
8. AS WASTE REMOVAL AND POST REMOVAL SAMPLING ARE COMPLETED, PERFORM SITE RESTORATION TO MINIMIZE EROSION AND SEDIMENTATION. SITE RESTORATION WILL CONSIST OF REGRADING DISTURBED AREAS TO MATCH SURROUNDING TOPOGRAPHY, REVEGETATING DISTURBED AREAS AS SPECIFIED, AND PLACING EROSION MATTING ON SLOPES. UXO DISPOSAL AREAS ALONG EMBANKMENTS ADJACENT TO FELGATES CREEK WILL BE GRADED AS DIRECTED BY THE NAVY TECHNICAL REPRESENTATIVE.

SITE GROUNDWATER MONITORING WELL DATA	
GROUNDWATER MONITORING WELL	TOP OF CASING ELEVATION (FT. MSL)
2GW01	21.74
2GW02	5.42
2GW03	4.30
2GW04	3.59

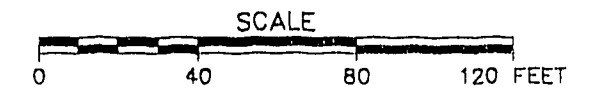


FIGURE 4

NAVAL CONSTRUCTION BATTALION CENTER
NAVAL FACILITIES ENGINEERING COMMAND
PORT HUENEME, CALIFORNIA

TITLE	SITE 2 EROSION AND SEDIMENT CONTROL PLAN LAYOUT TURKEY ROAD LANDFILL MINE CASINGS AND DEBRIS REMOVAL NAVAL WEAPONS STATION YORKTOWN YORKTOWN, VIRGINIA
-------	---



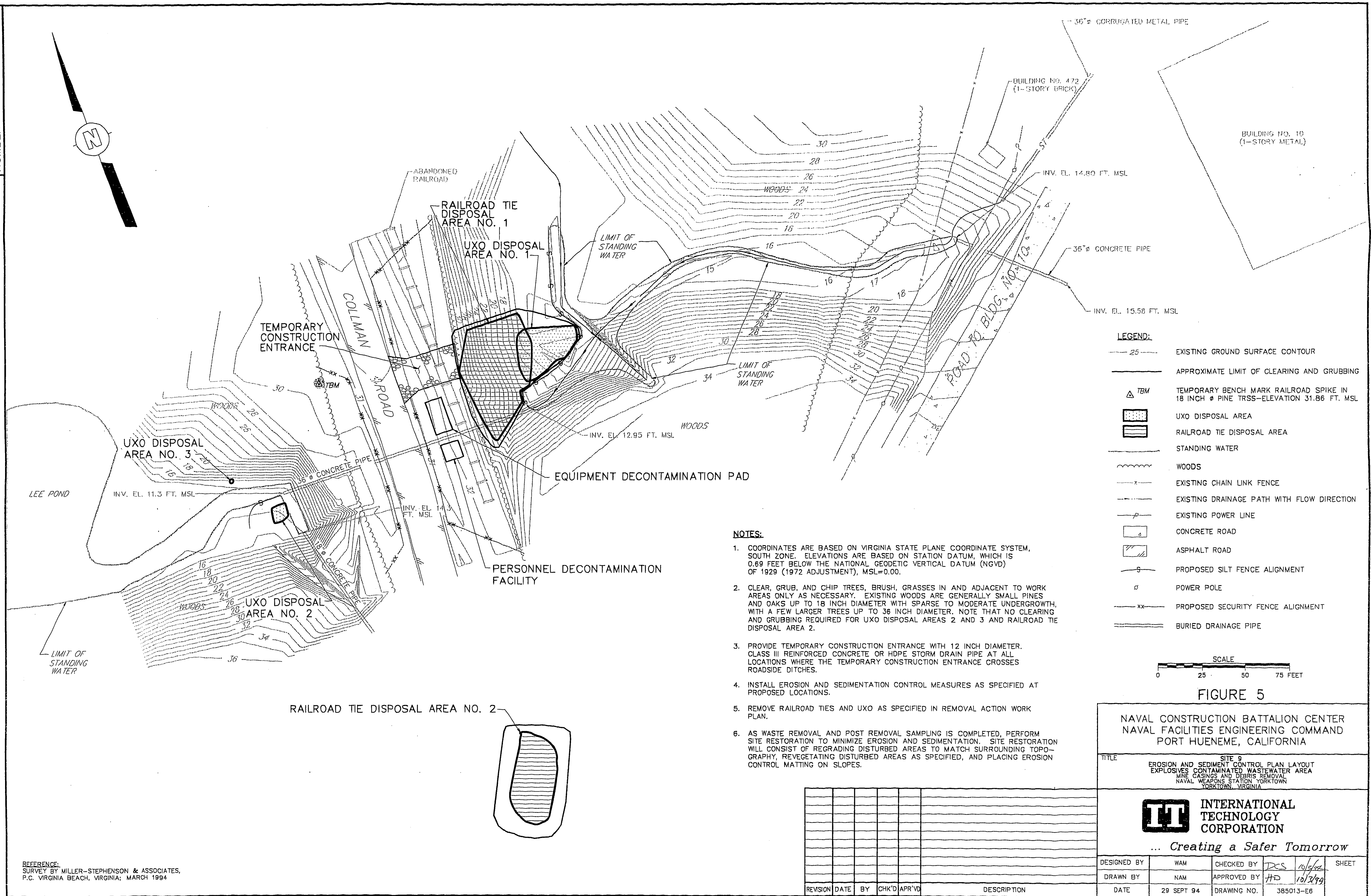
INTERNATIONAL
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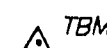
... *Creating a Safer Tomorrow*




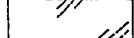






DESIGNED BY	WAM	CHECKED BY	CS	10/3/94	SHEET
DRAWN BY	NAM	APPROVED BY	AD	10/3/94	
DATE	29 SEPT 94	DRAWING NO.	385013-E5		

REFERENCE:
SURVEY BY MILLER-STEPHENSON & ASSOCIATES,
P.C. VIRGINIA BEACH, VIRGINIA; MARCH 1994

[illegible]



[illegible]

	EXISTING GROUND SURFACE CONTOUR
	TEMPORARY BENCH MARK RAILROAD SPIKE IN POWER POLE NO. 25-ELEVATION 73.87 FT. MSL
	WOODS
	EXISTING DRAINAGE PATH WITH FLOW DIRECTION
	ASPHALT ROAD
	APPROXIMATE DRUM LOCATION
	APPROXIMATE LIMITS OF BURIED METALLIC OBJECTS
	APPROXIMATE LIMITS OF SURFACE WASTE
	PROPOSED SILT FENCE ALIGNMENT
	PROPOSED SECURITY FENCE ALIGNMENT
	APPROXIMATE LIMITS OF CLEARING AND GRUBBING

WASTE CHARACTERIZATION INFORMATION		
WASTE STREAM	DRUM I.D. NUMBER(S)	VISUAL DESCRIPTION
WP-001	21, 25, 26, AND 29	WASTE PAINT
WP-002	7, 8, 15	WAX

1. COORDINATES ARE BASED ON VIRGINIA STATE PLANE COORDINATE SYSTEM, SOUTH ZONE. ELEVATIONS ARE BASED ON STATION DATUM, WHICH IS 0.69 FEET BELOW THE NATIONAL GEODETIC VERTICAL DATUM (NGVD) OF 1929 (1972 ADJUSTMENT), MSL=0.00.
2. CLEAR, GRUB, AND CHIP TREES, BRUSH, AND GRASSES IN AND ADJACENT TO WORK AREAS, ONLY AS NECESSARY. EXISTING WOODS ARE GENERALLY SMALL PINES AND OAKS UP TO 18 INCH DIAMETER WITH SPARSE TO MODERATE UNDERGROWTH, WITH A FEW LARGER TREES UP TO 36 INCH DIAMETER.
3. PROVIDE TEMPORARY CONSTRUCTION ENTRANCE WITH 12 INCH DIAMETER. CLASS III REINFORCED CONCRETE STORM DRAIN PIPE AT ALL LOCATIONS WHERE THE CROSSES ROADSIDE DITCHES.
4. INSTALL EROSION AND SEDIMENTATION CONTROL MEASURES AS SPECIFIED AT PROPOSED LOCATIONS.
5. REMOVE UXO, CONSTRUCTION/DEMOLITION DEBRIS, AND DRUMS AS SPECIFIED IN THE REMOVAL ACTION WORK PLAN.
6. DRUM NUMBERS IDENTIFIED BY METAL TAGS. FOR ADDITIONAL DRUM INFORMATION SEE TABLE 1 OF WASTE CHARACTERIZATION AND DISPOSAL REPORT AND REMOVAL ACTION WORK PLAN.
7. AS WASTE REMOVAL AND POST REMOVAL SAMPLING ARE COMPLETED, PERFORM SITE RESTORATION TO MINIMIZE EROSION AND SEDIMENTATION. SITE RESTORATION WILL CONSIST OF REGRADEING DISTURBED AREAS TO MATCH SURROUNDING TOPOGRAPHY, REVEGETATING DISTURBED AREAS AS SPECIFIED, AND PLACING EROSION MATTING ON SLOPES.

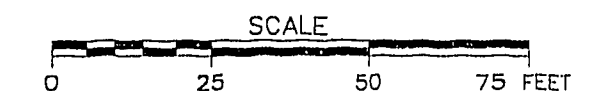


FIGURE 6

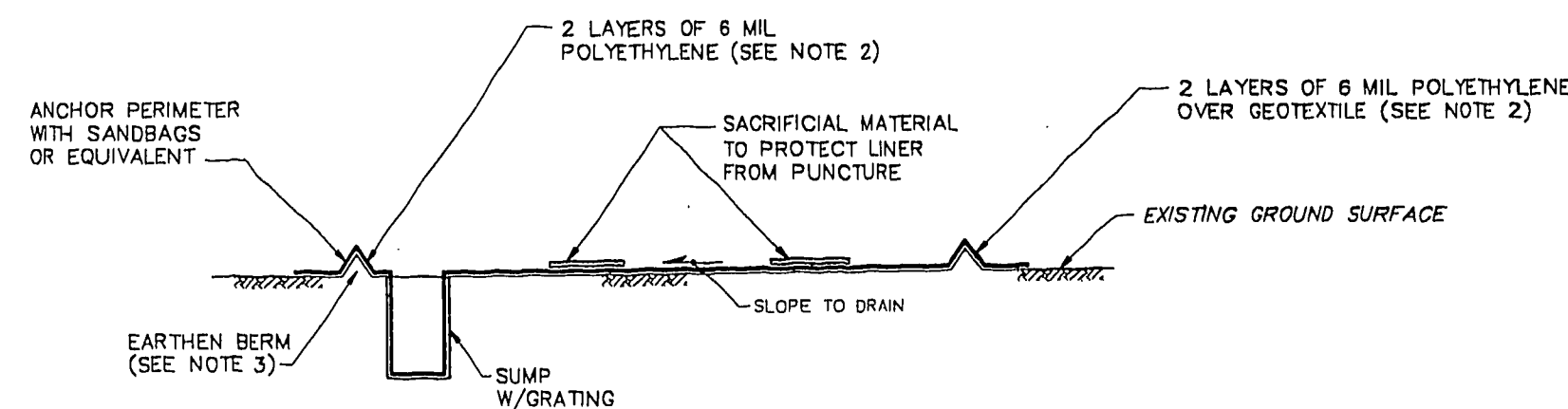
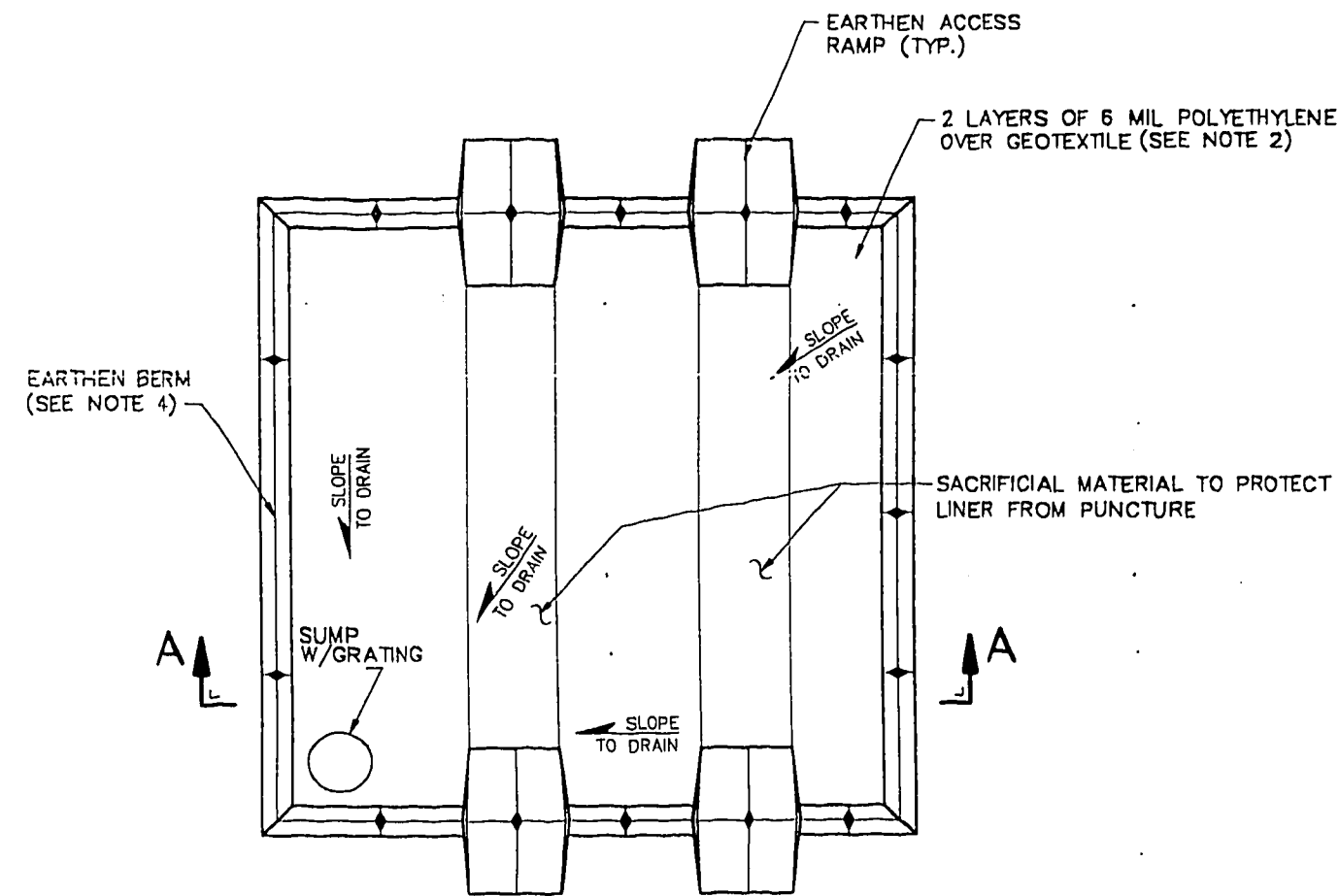
NAVAL CONSTRUCTION BATTALION CENTER
NAVAL FACILITIES ENGINEERING COMMAND
PORT HUENEME, CALIFORNIA

TITLE SITE SCREENING AREA 4
EROSION AND SEDIMENT CONTROL PLAN LAYOUT
WEAPONS CASING DISPOSAL AREA
MINE CASINGS AND DEBRIS REMOVAL
NAVAL WEAPONS STATION YORKTOWN
YORKTOWN, VIRGINIA

INTERNATIONAL
TECHNOLOGY
CORPORATION

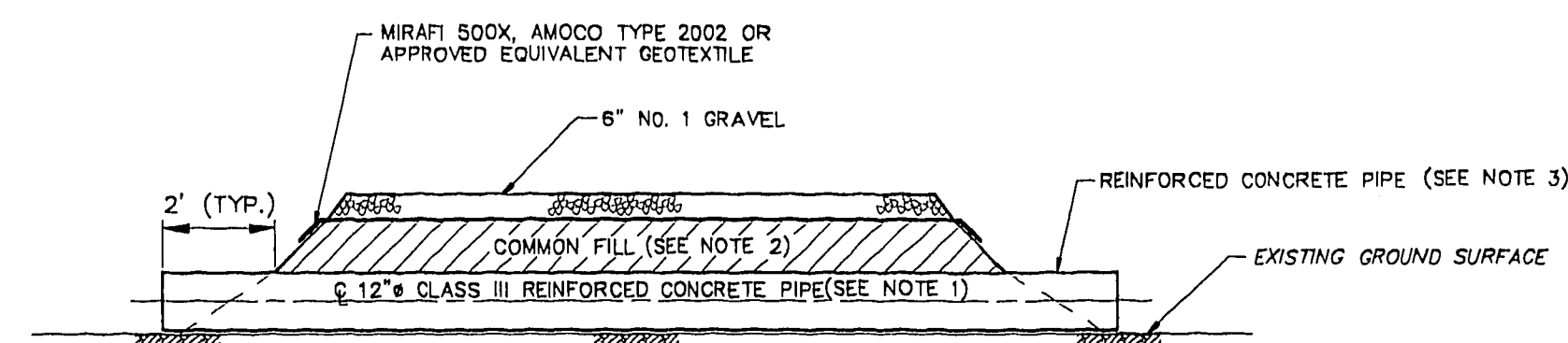
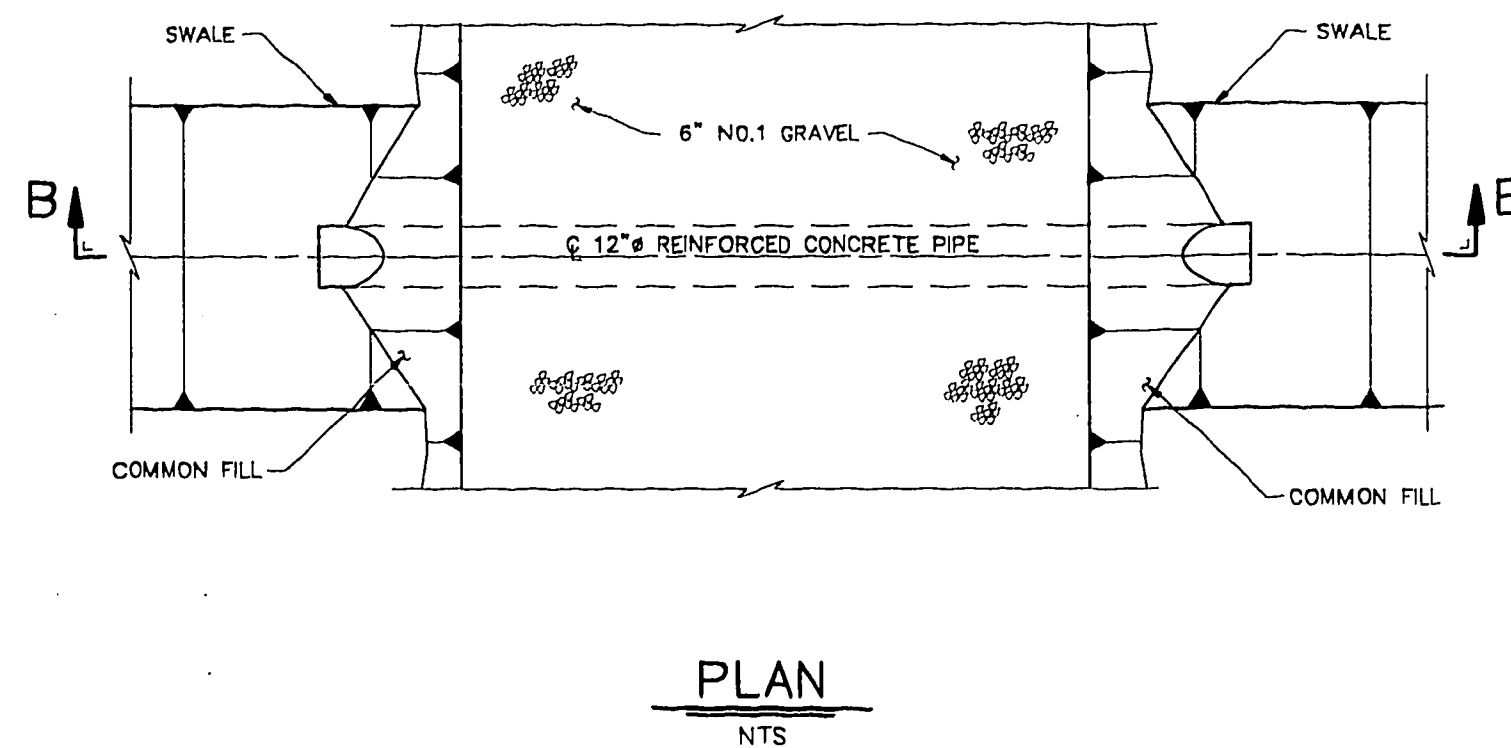
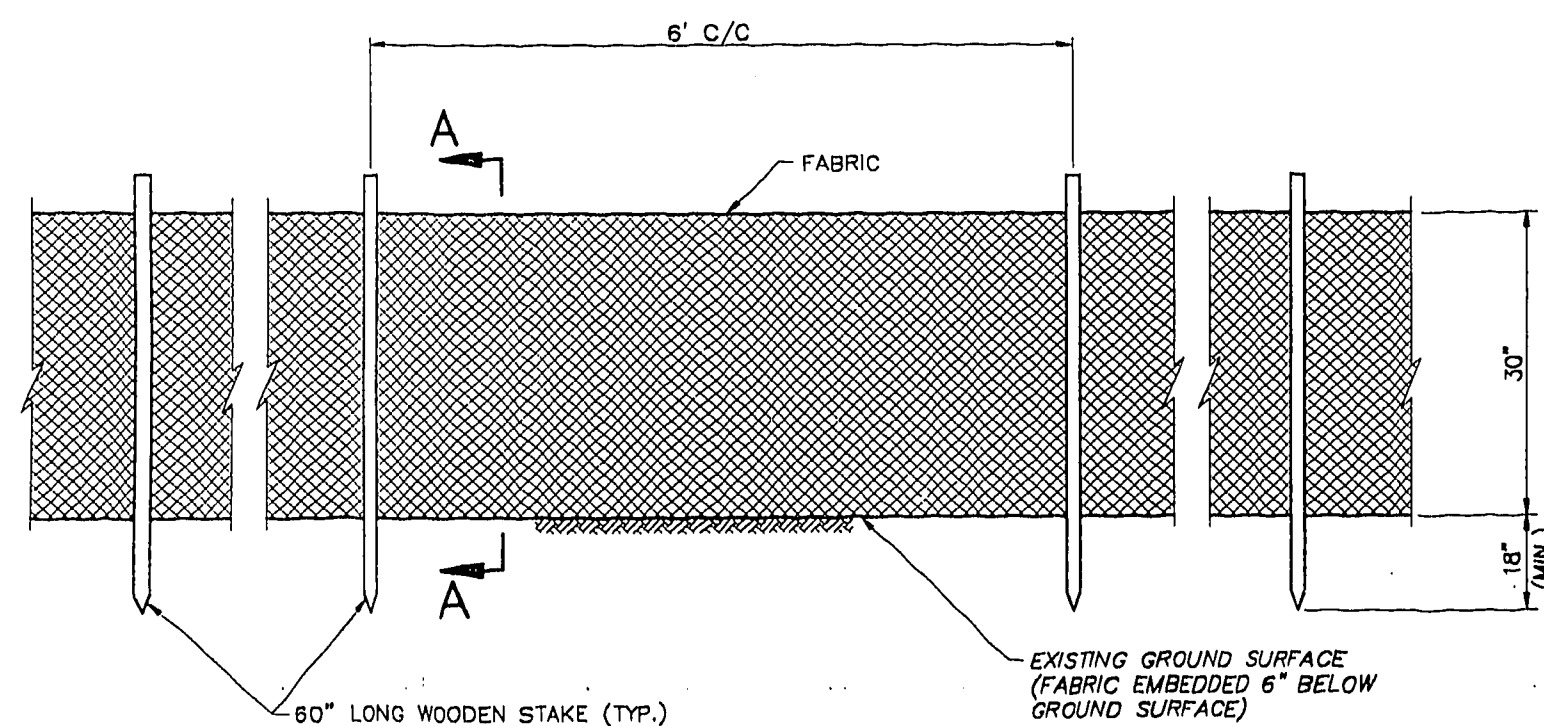
... *Creating a Safer Tomorrow*

DESIGNED BY	WAM	CHECKED BY	DES	10/3/97	SHEET
DRAWN BY	NAM	APPROVED BY	HD	10/3/97	
DATE	29 SEPT 94	DRAWING NO.	385013-F7		



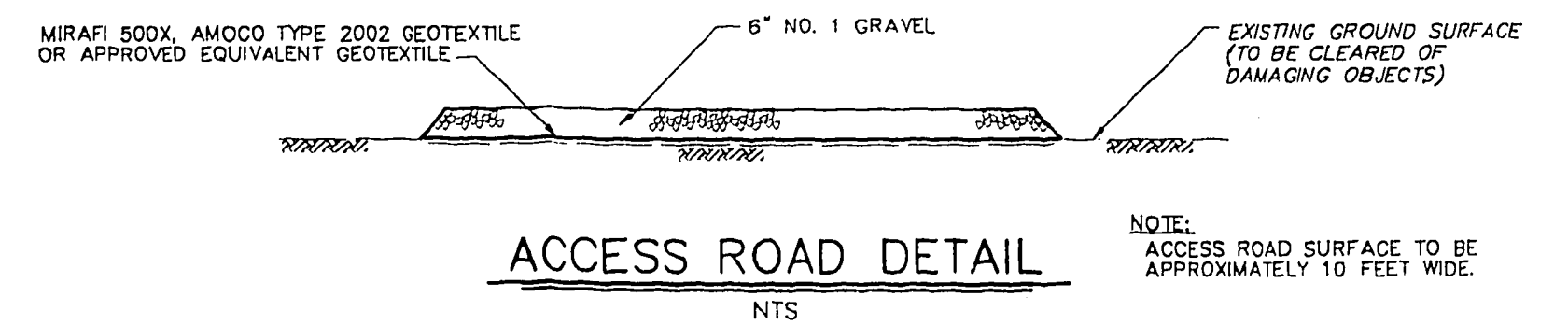
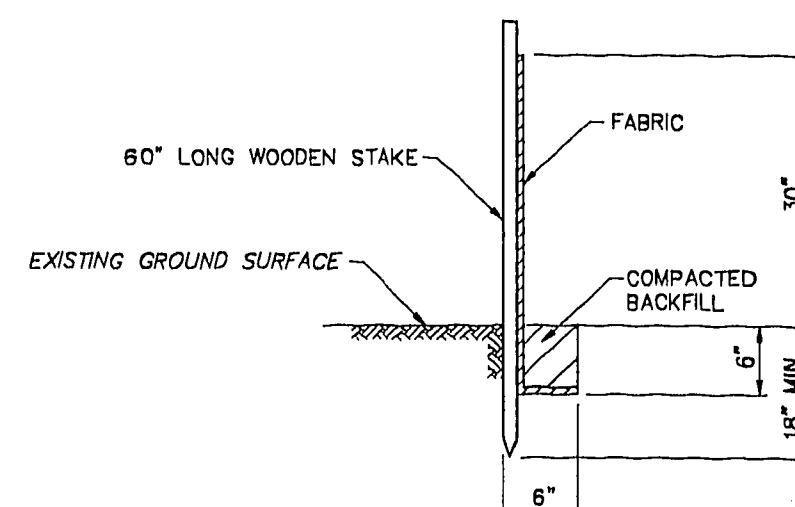
NOTES:

1. EQUIPMENT DECONTAMINATION PAD TO BE SIZED AS REQUIRED.
2. A 20 OR 30 MIL PVC GEOMEMBRANE MAY BE SUBSTITUTED IN LIEU OF 6 MIL POLYETHYLENE.
3. EARTHEN BERM TO HAVE 12" MINIMUM HEIGHT.

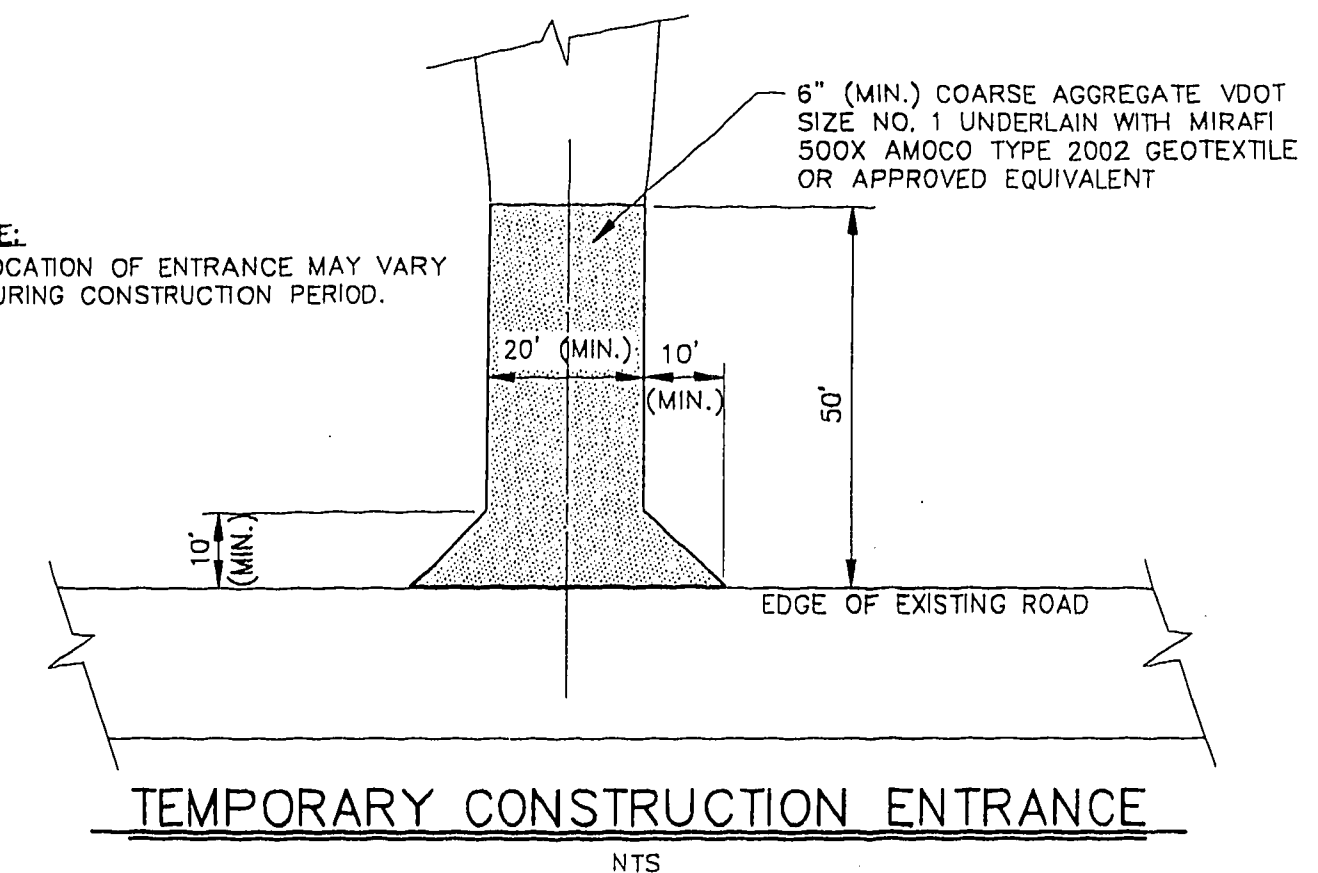


NOTES:

1. AN HDPE CULVERT MAY BE SUBSTITUTED
2. FILL THICKNESS TO BE FIELD DETERMINED TO MATCH ADJACENT AREAS (MIN. 18").
3. PIPE LENGTH TO BE FIELD DETERMINED.



NOTE:
LOCATION OF ENTRANCE MAY VARY DURING CONSTRUCTION PERIOD.



GENERAL EROSION AND SEDIMENT CONTROL NOTES:

- ES-1 UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK AND VIRGINIA REGULATIONS VR 625-02-00 EROSION AND SEDIMENT CONTROL REGULATIONS.
- ES-2 THE PLAN APPROVING AUTHORITY MUST BE NOTIFIED ONE WEEK PRIOR TO THE PRECONSTRUCTION CONFERENCE, ONE WEEK PRIOR TO THE COMMENCEMENT OF LAND DISTURBING ACTIVITY, AND ONE WEEK PRIOR TO THE FINAL INSPECTION.
- ES-3 ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN CLEARING.
- ES-4 A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN SHALL BE MAINTAINED ON THE SITE AT ALL TIMES.
- ES-5 PRIOR TO COMMENCING LAND DISTURBING ACTIVITIES IN AREAS OTHER THAN INDICATED ON THESE PLANS (INCLUDING, BUT NOT LIMITED TO, OFF-SITE BORROW OR WASTE AREAS), THE CONTRACTOR SHALL SUBMIT A SUPPLEMENTARY EROSION CONTROL PLAN TO THE OWNER FOR REVIEW AND APPROVAL BY THE PLAN APPROVING AUTHORITY.
- ES-6 THE CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF ANY ADDITIONAL EROSION CONTROL MEASURES NECESSARY TO PREVENT EROSION AND SEDIMENTATION AS DETERMINED BY THE PLAN APPROVING AUTHORITY.
- ES-7 ALL DISTURBED AREAS ARE TO DRAIN TO APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING LAND DISTURBING ACTIVITIES AND DURING SITE DEVELOPMENT UNTIL FINAL STABILIZATION IS ACHIEVED.
- ES-8 DURING DEWATERING OPERATIONS, WATER WILL BE PUMPED INTO AN APPROVED FILTERING DEVICE.
- ES-9 THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES PERIODICALLY AND AFTER EACH RUNOFF-PRODUCING RAINFALL EVENT. ANY NECESSARY REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES SHALL BE MADE IMMEDIATELY.

FIGURE 7

NAVAL CONSTRUCTION BATTALION CENTER
NAVAL FACILITIES ENGINEERING COMMAND
PORT HUENEME, CALIFORNIA

TITLE EROSION AND SEDIMENT CONTROL DETAIL
SITES 2 AND 9 AND SITE SCREENING AREA 4
MINE CASINGS AND DEBRIS REMOVAL
NAVAL WEAPONS STATION, YORKTOWN
YORKTOWN, VIRGINIA



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REVISION	DATE	BY	CHK'D	APR. VD	DESCRIPTION
1	09/23/94				NEW INFORMATION/REVISIONS PER NAVY REVIEW

DESIGNED BY	WAM	CHECKED BY	DCS	10/3/94	SHEET
DRAWN BY	NAM	APPROVED BY	HP	10/3/94	
DATE	29 SEPT 94	DRAWING NO.	385013-E4		

APPENDIX D

LABORATORY CHEMICAL ANALYTICAL RESULTS

April 13, 1994

INTERNATIONAL TECHNOLOGY CORPORATION

0001A

CASE NARRATIVE

Laboratory Name: ITAS Pittsburgh, Pennsylvania
Project Name: NEESA - Yorktown
Project Number: 305933
Work Order Number: Q403379
Data Package: Organic
Method: TCLP

Sample Number:

WP001
WP002
WP003

WP004
WP005

Shipment

Five samples were received at the ITAS Pittsburgh Laboratory on March 31, 1994, for various analytical testing.

Results are organized into three data packages. The Organic Data Package contains the TCLP volatile, semivolatile, and pesticides. The Metals Package contains the TCLP metals data. The General Chemistry Data Package contains the ignitability corrosivity reactivity, and asbestos data.

Results were determined in accordance with Federal Register, Vol. 57, No. 227, Tuesday, November 24, 1992; Federal Register, Vol. 55, No. 126, Friday, June 29, 1990; Methods 8080, 8240, and 8270, Test Methods for Evaluating Solid Waste, EPA SW-846, 3rd ed., 1986.

Volatiles

A matrix spike was performed on sample WP001.

Semivolatiles

A matrix spike was performed on sample WP001.

Pesticide/PCB

A matrix spike was performed on sample WP001.

I certify that this data package is in compliance with terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package and in the computer-readable data submitted on floppy

April 13, 1994

INTERNATIONAL TECHNOLOGY CORPORATION

008 2A

skette has been authorized by the Laboratory Manager or his designee as verified by the following signature.

Carrie L. Smith-Gamber

Carrie L. Smith-Gamber, Project Manager

4/14/94

Date

VOLATILE TCLP COMPOUNDS

Laboratory Name: IT PITTSBURGH
Lab Sample ID: Q40337901
Client Sample ID: WP001

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: _____
Date Analyzed: 04/05/94
Dilution Factor: 1.0

0003A

CAS Number		ug/L
75-01-4	Vinyl Chloride	10 U
75-35-4	1,1-Dichloroethene	5 U
67-66-3	Chloroform	5 U
107-06-2	1,2-Dichloroethane	5 U
78-93-3	2-Butanone	100 U
56-23-5	Carbon Tetrachloride	5 U
79-01-6	Trichloroethene	5 U
71-43-2	Benzene	5 U
127-18-4	Tetrachloroethene	5 U
108-90-7	Chlorobenzene	5 U

CAS Number	mg/l	ug/L
	0.010 u	
	0.005 u	
	0.005 u	
	0.005 u	
	0.100 u	
	0.005 u	
	0.005 u	
	0.005 u	
	0.005 u	
	0.005 u	

The Lab ID for data on this page is 1060405D.

REVIEWED BY: K
DATE: 4/11/94

VOLATILE TCLP COMPOUNDS

Laboratory Name: IT PITTSBURGH
Lab Sample ID: 040337903
Client Sample ID: WP002

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: 0004A

Date Extracted: _____
Date Analyzed: 04/05/94
Dilution Factor: 1.0

CAS Number		ug/L	CAS Number	mg/L	ug/L
75-01-4	Vinyl Chloride	10 U		0.010 u	
75-35-4	1,1-Dichloroethene	5 U		0.005 u	
67-66-3	Chloroform	5 U		0.005 u	
107-06-2	1,2-Dichloroethane	5 U		0.005 u	
78-93-3	2-Butanone	100 U		0.100 u	
56-23-5	Carbon Tetrachloride	5 U		0.005 u	
79-01-6	Trichloroethene	5 U		0.005 u	
71-43-2	Benzene	5 U		0.005 u	
127-18-4	Tetrachloroethene	5 U		0.005 u	
108-90-7	Chlorobenzene	5 U		0.005 u	

The Lab ID for data on this page is 1070405D.

REVIEWED BY: K
DATE: 4/11/94

VOLATILE TCLP COMPOUNDS

Laboratory Name: IT PITTSBURGH
Lab Sample ID: 040337904
Client Sample ID: WP003

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: 0005A

Date Extracted: _____
Date Analyzed: 04/05/94
Dilution Factor: 1.0

CAS Number		ug/L
75-01-4	Vinyl Chloride	10 U
75-35-4	1,1-Dichloroethene	5 U
67-66-3	Chloroform	5 U
107-06-2	1,2-Dichloroethane	5 U
78-93-3	2-Butanone	100 U
56-23-5	Carbon Tetrachloride	5 U
79-01-6	Trichloroethene	5 U
71-43-2	Benzene	5 U
127-18-4	Tetrachloroethene	5 U
108-90-7	Chlorobenzene	5 U

CAS Number	mg/l	ug/L
	0.010 u	
	0.005 u	
	0.005 u	
	0.005 u	
	0.100 u	
	0.005 u	
	0.005 u	
	0.005 u	
	0.005 u	
	0.005 u	

The Lab ID for data on this page is 1080405D.

REVIEWED BY: K
DATE: 4/11/94

VOLATILE TCLP COMPOUNDS

Laboratory Name: IT PITTSBURGH
Lab Sample ID: Q40337905
Client Sample ID: WP004

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: 0006

Date Extracted: _____
Date Analyzed: 04/05/94
Dilution Factor: 1.0

CAS Number		ug/L
75-01-4	Vinyl Chloride	10 U
75-35-4	1,1-Dichloroethene	5 U
67-66-3	Chloroform	5 U
107-06-2	1,2-Dichloroethane	5 U
78-93-3	2-Butanone	100 U
56-23-5	Carbon Tetrachloride	5 U
79-01-6	Trichloroethene	5 U
71-43-2	Benzene	5 U
127-18-4	Tetrachloroethene	5 U
108-90-7	Chlorobenzene	5 U

CAS Number	mg/l	ug/L
	0.010 u	
	0.005 u	
	0.005 u	
	0.005 u	
	0.100 u	
	0.005 u	
	0.005 u	
	0.005 u	
	0.005 u	
	0.005 u	

The Lab ID for data on this page is 1090405D.

REVIEWED BY: K
DATE: 4/11/94

2A
WATER VOLATILE SURROGATE RECOVERY

Lab Name: IT PITTSBURGH

Contract: 305933

Lab Code: ITPA

Case No.: YORK33

SAS No.: 0007A

SDG No.: YORKTO

EPA	S1	S2	S3	OTHER	TOT
SAMPLE NO.	(TOL)#	(BFB)#	(DCE)#		OUT
=====	=====	=====	=====	=====	=====
01 BLKTCLPMS	98	104	93	0	0
02 PBTCLP	109	103	94	0	0
03 WP001	100	98	83	0	0
04 WP001MS	89	92	91	0	0
05 WP002	96	107	83	0	0
06 WP003	107	100	86	0	0
07 WP004	105	100	84	0	0
08 VBLK1	106	98	80	0	0
09 VBLK2	100	90	95	0	0

QC LIMITS

S1 (TOL) = Toluene-d8 (88-110)

S2 (BFB) = Bromofluorobenzene (86-115)

S3 (DCE) = 1,2-Dichloroethane-d4 (76-114)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

VOLATILE TCLP COMPOUNDS

Laboratory Name: IT PITTSBURGH
Lab Sample ID: BLKTCLPMS
Client Sample ID: BLKTCLPMS

Concentration: LOW
Sample Matrix: WATER
Percent Moisture:

Date Extracted:
Date Analyzed: 04/06/94
Dilution Factor: 1.0

0008 A

CAS Number		ug/L	CAS Number	ug/L
75-01-4	Vinyl Chloride	45 95	00C	
75-35-4	1,1-Dichloroethene	84	4/12/94	
67-66-3	Chloroform	96		
107-06-2	1,2-Dichloroethane	94		
78-93-3	2-Butanone	89 J		
56-23-5	Carbon Tetrachloride	100 103		
79-01-6	Trichloroethene	98		
71-43-2	Benzene	97		
127-18-4	Tetrachloroethene	99		
108-90-7	Chlorobenzene	96		

The Lab ID for data on this page is 1020405K.

VOLATILE TCLP COMPOUNDS

Laboratory Name: IT PITTSBURGH
Lab Sample ID: Q40337902
Client Sample ID: WP001MS

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: _____
Date Analyzed: 04/06/94
Dilution Factor: 1.0

0009 A

CAS Number		<i>% vol</i> ug/L	<i>K_d ug/L</i>	CAS Number	ug/L
75-01-4	Vinyl Chloride	112 112			
75-35-4	1,1-Dichloroethene	86			
67-66-3	Chloroform	97			
107-06-2	1,2-Dichloroethane	92			
78-93-3	2-Butanone	94	J		
56-23-5	Carbon Tetrachloride	100			
79-01-6	Trichloroethene	98			
71-43-2	Benzene	95			
127-18-4	Tetrachloroethene	92			
108-90-7	Chlorobenzene	92			

The Lab ID for data on this page is 1030405K.

4A
VOLATILE METHOD BLANK SUMMARY

Lab Name: IT PITTSBURGH Contract: 305933
 Lab Code: ITPA Case No.: YORK33 SAS No.: 0010^A SDG No.: YORKTO
 Lab File ID: WB10405K Lab Sample ID: VBLK4-5-94
 Date Analyzed: 04/06/94 Time Analyzed: 0115
 Matrix: (soil/water) WATER Level: (low/med) LOW
 Instrument ID: FIN1

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01 BLKTCLPMS	BLKTCLPMS	1020405K	0227
02 WFO01MS	Q40337902	1030405K	0258

COMMENTS: VBLK 5ML+110-033-2,3
 FIN1 METHOD VO

4A
VOLATILE METHOD BLANK SUMMARY

Lab Name: IT PITTSBURGH Contract: 305933
 Lab Code: ITPA Case No.: YORK33 SAS No.: 0011^A SDG No.: YORKTO
 Lab File ID: DB10405D Lab Sample ID: VBLK4-5-94
 Date Analyzed: 04/05/94 Time Analyzed: 1559
 Matrix: (soil/water) WATER Level: (low/med) LOW
 Instrument ID: FIN1

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01 PBTCLP	PBTCLP	1050405D	2010
02 IWP001	Q40337901	1060405D	2052
03 IWP002	Q40337903	1070405D	2125
04 IWP003	Q40337904	1080405D	2206
05 IWP004	Q40337905	1090405D	2231

COMMENTS: VBLK SML +110-033-2,3
 FIN1 METH VO

VOLATILE TCLP COMPOUNDS

Laboratory Name: IT PITTSBURGH
Lab Sample ID: VBLK4-5-94
Client Sample ID: VBLK1

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: 0012A

Date Extracted:
Date Analyzed: 04/05/94
Dilution Factor: 1.0

CAS Number		ug/L
75-01-4	Vinyl Chloride	10 U
75-35-4	1,1-Dichloroethene	5 U
67-66-3	Chloroform	5 U
107-06-2	1,2-Dichloroethane	5 U
78-93-3	2-Butanone	100 U
56-23-5	Carbon Tetrachloride	5 U
79-01-6	Trichloroethene	5 U
71-43-2	Benzene	5 U
127-18-4	Tetrachloroethene	5 U
108-90-7	Chlorobenzene	5 U

CAS Number	mg/l	ug/L
	0.010 U	
	0.005 U	
	0.005 U	
	0.005 U	
	0.100 U	
	0.005 U	
	0.005 U	
	0.005 U	
	0.005 U	
	0.005 U	

The Lab ID for data on this page is DB10405D.

REVIEWED BY: K
DATE: 4/11/94

VOLATILE TCLP COMPOUNDS

Laboratory Name: IT PITTSBURGH
Lab Sample ID: VBLK4-5-94
Client Sample ID: VBLK2

Concentration: LOW
Sample Matrix: WATER
Percent Moisture:

Date Extracted:
Date Analyzed: 04/06/94
Dilution Factor: 1.0

0013 A

CAS Number		ug/L
75-01-4	Vinyl Chloride	10 U
75-35-4	1,1-Dichloroethene	5 U
67-66-3	Chloroform	5 U
107-06-2	1,2-Dichloroethane	5 U
78-93-3	2-Butanone	100 U
56-23-5	Carbon Tetrachloride	5 U
79-01-6	Trichloroethene	5 U
71-43-2	Benzene	5 U
127-18-4	Tetrachloroethene	5 U
108-90-7	Chlorobenzene	5 U

CAS Number	mg/L	ug/L
	0.010 u	
	0.005 u	
	0.005 u	
	0.005 u	
	0.100 u	
	0.005 u	
	0.005 u	
	0.005 u	
	0.005 u	
	0.005 u	

The Lab ID for data on this page is WB10405K.

REVIEWED BY: K
DATE: 4/11/94

VOLATILE TCLP COMPOUNDS

Laboratory Name: IT PITTSBURGH
Lab Sample ID: PBTCLP
Client Sample ID: PBTCLP

Concentration: LOW
Sample Matrix: WATER
Percent Moisture:

Date Extracted:
Date Analyzed: 04/05/94
Dilution Factor: 1.0

0014 A

CAS Number		ug/L	CAS Number	mg/L	ug/L
75-01-4	Vinyl Chloride	10 U		0.010 u	
75-35-4	1,1-Dichloroethene	5 U		0.005 u	
67-66-3	Chloroform	5 U		0.005 u	
107-06-2	1,2-Dichloroethane	5 U		0.005 u	
78-93-3	2-Butanone	100 U		0.100 u	
56-23-5	Carbon Tetrachloride	5 U		0.005 u	
79-01-6	Trichloroethene	5 U		0.005 u	
71-43-2	Benzene	5 U		0.005 u	
127-18-4	Tetrachloroethene	5 U		0.005 u	
108-90-7	Chlorobenzene	5 U		0.005 u	

The Lab ID for data on this page is 1050405D.

REVIEWED BY: K
DATE: 4/11/94

8A
VOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: IT PITTSBURGH Contract: 305933
 Lab Code: ITPA Case No.: YORK33 SAS No.: 0015^A SDG No.: YORKTO
 Lab File ID (Standard): 1B10405K Date Analyzed: 04/06/94
 Instrument ID: FIN1 Time Analyzed: 022
 Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

	IS1 (BCM)		IS2 (DFB)		IS3 (CBZ)	
	AREA #	RT	AREA #	RT	AREA #	RT
=====	=====	=====	=====	=====	=====	=====
12 HOUR STD	30200	8.74	138000	10.59	125000	16.79
=====	=====	=====	=====	=====	=====	=====
UPPER LIMIT	60400		276000		250000	
=====	=====	=====	=====	=====	=====	=====
LOWER LIMIT	15100		69000		62500	
=====	=====	=====	=====	=====	=====	=====
EPA SAMPLE						
NO.						
=====	=====	=====	=====	=====	=====	=====
01 BLKTCLPMS	26600	8.70	114000	10.55	108000	16.75
02 WFO01MS	26500	8.75	120000	10.59	120000	16.77
03 VBLK2	29300	8.74	125000	10.59	109000	16.77
=====	=====	=====	=====	=====	=====	=====

IS1 (BCM) = Bromochloromethane
 IS2 (DFB) = 1,4-Difluorobenzene
 IS3 (CBZ) = Chlorobenzene

UPPER LIMIT = + 100%
 of internal standard area.
 LOWER LIMIT = - 50%
 of internal standard area.

Column used to flag internal standard area values with an asterisk

8A
VOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: IT PITTSBURGH Contract: 305933
 Lab Code: ITPA Case No.: YORK33 SAS No.: 0016 SDG No.: YORKTO
 Lab File ID (Standard): 1B10405D Date Analyzed: 04/05/94
 Instrument ID: FIN1 Time Analyzed: 1404
 Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

	IS1 (BCM)		IS2 (DFB)		IS3 (CBZ)	
	AREA #	RT	AREA #	RT	AREA #	RT
=====	=====	=====	=====	=====	=====	=====
12 HOUR STD	31900	8.69	189000	10.54	178000	16.77
=====	=====	=====	=====	=====	=====	=====
UPPER LIMIT	63800		378000		356000	
=====	=====	=====	=====	=====	=====	=====
LOWER LIMIT	15950		94500		89000	
=====	=====	=====	=====	=====	=====	=====
EPA SAMPLE						
NO.						
=====	=====	=====	=====	=====	=====	=====
01 PBTCLP	31600	8.72	167000	10.57	147000	16.77
02 WP001	33700	8.70	164000	10.55	148000	16.77
03 WP002	32700	8.74	161000	10.59	163000	16.77
04 WP003	33300	8.79	158000	10.62	145000	16.79
05 WP004	31500	8.72	154000	10.57	139000	16.77
06 VBLK1	43400	8.77	210000	10.62	180000	16.80
=====	=====	=====	=====	=====	=====	=====

IS1 (BCM) = Bromochloromethane
 IS2 (DFB) = 1,4-Difluorobenzene
 IS3 (CBZ) = Chlorobenzene

UPPER LIMIT = + 100%
 of internal standard area.
 LOWER LIMIT = - 50%
 of internal standard area.

Column used to flag internal standard area values with an asterisk

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: IT PITTSBURGH
Lab Sample ID: Q40337901
Client Sample ID: WP001

Concentration: LOW
Sample Matrix: WATER
Percent Moisture:

Date Extracted: 04/06/94
Date Analyzed: 04/11/94
Dilution Factor: 5.0

SEMIVOLATILE TCLP COMPOUNDS

CAS Number		UG/L	CAS Number	mg/l	UG/L
106-46-7	1,4-Dichlorobenzene . . .	50 U		0.050 u	
67-72-1	Hexachloroethane	50 U		0.050 u	
98-95-3	Nitrobenzene	50 U		0.050 u	
87-68-3	Hexachlorobutadiene . . .	50 U		0.050 u	
88-06-2	2,4,6-Trichlorophenol . .	50 U		0.050 u	
95-95-4	2,4,5-Trichlorophenol . .	50 U		0.050 u	
121-14-2	2,4-Dinitrotoluene	50 U		0.050 u	
118-74-1	Hexachlorobenzene	50 U		0.050 u	
87-86-5	Pentachlorophenol	250 U		0.250 u	
000-00-1	TOTAL METHYLPHENOL	50 U		0.050 u	
110-86-1	PYRIDINE	250 U		0.250 u	

The Lab ID for data on this page is 0030411D.

Form I

REVIEWED BY: K
DATE: 4/12/94

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: IT PITTSBURGH
Lab Sample ID: Q40337903
Client Sample ID: WP002

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 04/06/94
Date Analyzed: 04/11/94
Dilution Factor: 5.0

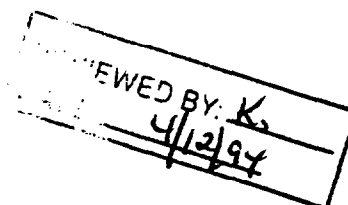
0018A

SEMIVOLATILE TCLP COMPOUNDS

CAS Number		UG/L	CAS Number	mg/l	UG/L
106-46-7	1,4-Dichlorobenzene	50 U		0.050 u	
67-72-1	Hexachloroethane	50 U		0.050 u	
98-95-3	Nitrobenzene	50 U		0.050 u	
87-68-3	Hexachlorobutadiene	50 U		0.050 u	
88-06-2	2,4,6-Trichlorophenol	50 U		0.050 u	
95-95-4	2,4,5-Trichlorophenol	50 U		0.050 u	
121-14-2	2,4-Dinitrotoluene	50 U		0.050 u	
118-74-1	Hexachlorobenzene	50 U		0.050 u	
87-86-5	Pentachlorophenol	250 U		0.050 u	
000-00-1	TOTAL METHYLPHENOL	50 U		0.250 u	
110-86-1	PYRIDINE	250 U		0.050 u	
				0.250 u	

The Lab ID for data on this page is 0040411D.

Form I



ORGANICS ANALYSIS DATA SHEET

Laboratory Name: IT PITTSBURGH
 Lab Sample ID: Q40337904
 Client Sample ID: WP003

Concentration: LOW
 Sample Matrix: WATER
 Percent Moisture:

Date Extracted: 04/06/94
 Date Analyzed: 04/11/94
 Dilution Factor: 5.0

0019A

SEMIVOLATILE TCLP COMPOUNDS

CAS Number		UG/L	CAS Number	mg/l	UG/L
106-46-7	1,4-Dichlorobenzene	50 U		0.050 u	
67-72-1	Hexachloroethane	50 U		0.050 u	
98-95-3	Nitrobenzene	50 U		0.050 u	
87-68-3	Hexachlorobutadiene	50 U		0.050 u	
88-06-2	2,4,6-Trichlorophenol	50 U		0.050 u	
95-95-4	2,4,5-Trichlorophenol	50 U		0.050 u	
121-14-2	2,4-Dinitrotoluene	50 U		0.050 u	
118-74-1	Hexachlorobenzene	50 U		0.050 u	
87-86-5	Pentachlorophenol	250 U		0.050 u	
000-00-1	TOTAL METHYLPHENOL	70 82		0.250 u	
110-86-1	PYRIDINE	250 U		0.082	
				0.250 u	

K₂ 4/12/94

The Lab ID for data on this page is 0050411D.

Form I

REVIEWED BY: K
 DATE: 4/12/94

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: IT PITTSBURGH
Lab Sample ID: Q40337905
Client Sample ID: WP004

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: _____

Date Extracted: 04/06/94
Date Analyzed: 04/11/94
Dilution Factor: 5.0

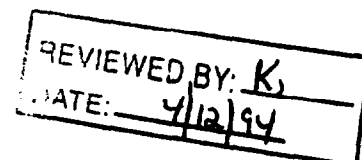
SEMIVOLATILE TCLP COMPOUNDS

0020A

CAS Number		UG/L	CAS Number	mg/L	UG/L
106-46-7	1,4-Dichlorobenzene	50 U		0.050 u	
67-72-1	Hexachloroethane	50 U		0.050 u	
98-95-3	Nitrobenzene	50 U		0.050 u	
87-68-3	Hexachlorobutadiene	50 U		0.050 u	
88-06-2	2,4,6-Trichlorophenol	50 U		0.050 u	
95-95-4	2,4,5-Trichlorophenol	50 U		0.050 u	
121-14-2	2,4-Dinitrotoluene	50 U		0.050 u	
118-74-1	Hexachlorobenzene	50 U		0.050 u	
87-86-5	Pentachlorophenol	250 U		0.050 u	
000-00-1	TOTAL METHYLPHENOL	50 U		0.250 u	
110-86-1	PYRIDINE	250 U		0.050 u	
				0.250 u	

The Lab ID for data on this page is 0060411D.

Form I



20
WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: IT PITTSBURGH

Contract: 305933

Lab Code: ITPA

Case No.: YORK33

SAS No.: 0021^A

SDG No.: YORKTO

EPA	S1	S2	S3	S4	S5	S6	OTHER	TOT
SAMPLE NO.	(NBZ)#	(FBP)#	(TPH)#	(PHL)#	(2FP)#	(TBP)#		OUT
=====	=====	=====	=====	=====	=====	=====	=====	=====
01 BLKTCLPMS	56	57	77	28	36	81	0	0
02 PBTCLP	55	57	73	25	32	66	0	0
03 WP001	54	52	43	24	32	70	0	0
04 WP001MS	41	40 *	60	23	31	70	0	1
05 WP002	52	55	68	24	31	66	0	0
06 WP003	60	59	63	28	36	68	0	0
07 WP004	54	53	66	26	33	60	0	0
08 SBLK1	55	55	72	22	31	65	0	0
=====	=====	=====	=====	=====	=====	=====	=====	=====

QC LIMITS

S1 (NBZ) = Nitrobenzene-d5 (35-114)
 S2 (FBP) = 2-Fluorobiphenyl (43-116)
 S3 (TPH) = Terphenyl (33-141)
 S4 (PHL) = Phenol-d5 (10-94)
 S5 (2FP) = 2-Fluorophenol (21-100)
 S6 (TBP) = 2,4,6-Tribromophenol (10-123)

Column to be used to flag recovery values
 * Values outside of contract required QC limits
 D Surrogates diluted out

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: IT PITTSBURGH
Lab Sample ID: BLKTCLPMS
Client Sample ID: BLKTCLPMS

Concentration: LOW
Sample Matrix: WATER
Percent Moisture:

Date Extracted: 04/06/94
Date Analyzed: 04/11/94
Dilution Factor: 5.0

0022A

SEMIVOLATILE TCLP COMPOUNDS

CAS Number		UG/L	CAS Number		UG/L
106-46-7	1,4-Dichlorobenzene . . .	190			47
67-72-1	Hexachloroethane	180			44
98-95-3	Nitrobenzene	230			56
87-68-3	Hexachlorobutadiene . . .	200			49
88-06-2	2,4,6-Trichlorophenol . .	310			77
95-95-4	2,4,5-Trichlorophenol . .	540			67
121-14-2	2,4-Dinitrotoluene	260			86
118-74-1	Hexachlorobenzene	250			82
87-86-5	Pentachlorophenol	740			92
000-00-1	TOTAL METHYLPHENOL	310			98
110-86-1	PYRIDINE	280			35

The Lab ID for data on this page is 0090411D.

Form I

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: IT PITTSBURGH
Lab Sample ID: Q40337902
Client Sample ID: WP001MS

Concentration: LOW
Sample Matrix: WATER
Percent Moisture:

Date Extracted: 04/06/94
Date Analyzed: 04/11/94
Dilution Factor: 5.0

SEMIVOLATILE TCLP COMPOUNDS

0023A

CAS Number		UG/L	CAS Number	% Rec	UG/L
106-46-7	1,4-Dichlorobenzene	160		39	
67-72-1	Hexachloroethane	150		37	
98-95-3	Nitrobenzene	160		41	
87-68-3	Hexachlorobutadiene	140		36	
88-06-2	2,4,6-Trichlorophenol	230		58	
95-95-4	2,4,5-Trichlorophenol	480		60	
121-14-2	2,4-Dinitrotoluene	220		72	
118-74-1	Hexachlorobenzene	190		64	
87-86-5	Pentachlorophenol	680		84	
000-00-1	TOTAL METHYLPHENOL	50 U		71	
110-86-1	PYRIDINE	200 J		25	

The Lab ID for data on this page is 0070411D.

Form I

4B
SEMIVOLATILE METHOD BLANK SUMMARY

Lab Name: IT PITTSBURGH Contract: 305933
 Lab Code: ITPA Case No.: YORK33 SAS No.: 0024^A SDG No.: YORKTO
 Lab File ID: 0010411D Lab Sample ID: SBLK4-6-94
 Date Extracted: 04/06/94 Extraction: (SepF/Cont/Sonc) SEPF
 Date Analyzed: 04/11/94 Time Analyzed: 1408
 Matrix: (soil/water) WATER Level: (low/med) LOW
 Instrument ID: HP59722

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01 BLKTCLPMS	BLKTCLPMS	0090411D	04/11/94
02 PBTCLP	PBTCLP	0020411D	04/11/94
03 IWP001	Q40337901	0030411D	04/11/94
04 IWP001MS	Q40337902	0070411D	04/11/94
05 IWP002	Q40337903	0040411D	04/11/94
06 IWP003	Q40337904	0050411D	04/11/94
07 IWP004	Q40337905	0060411D	04/11/94

COMMENTS:

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: IT PITTSBURGH
Lab Sample ID: SBLK4-6-94
Client Sample ID: SBLK1

Concentration: LOW
Sample Matrix: WATER
Percent Moisture:

Date Extracted: 04/06/94
Date Analyzed: 04/11/94
Dilution Factor: 1.0

SEMIVOLATILE TCLP COMPOUNDS

0025A

CAS Number		UG/L	CAS Number	mg/l	UG/L
106-46-7	1,4-Dichlorobenzene . . .	10 U		0.010 u	
67-72-1	Hexachloroethane	10 U		0.010 u	
98-95-3	Nitrobenzene	10 U		0.010 u	
87-68-3	Hexachlorobutadiene . . .	10 U		0.010 u	
88-06-2	2,4,6-Trichlorophenol . .	10 U		0.010 u	
95-95-4	2,4,5-Trichlorophenol . .	10 U		0.010 u	
121-14-2	2,4-Dinitrotoluene	10 U		0.010 u	
118-74-1	Hexachlorobenzene	10 U		0.010 u	
87-86-5	Pentachlorophenol	50 U		0.050 u	
000-00-1	TOTAL METHYLPHENOL	10 U		0.010 u	
110-86-1	PYRIDINE	50 U		0.050 u	

The Lab ID for data on this page is 0010411D.

Form I

REVIEWED BY: K
DATE: 4/12/94

ORGANICS ANALYSIS DATA SHEET

Laboratory Name: IT PITTSBURGH
Lab Sample ID: PBTCLP
Client Sample ID: PBTCLP

Concentration: LOW
Sample Matrix: WATER
Percent Moisture: 0026A

Date Extracted: 04/06/94
Date Analyzed: 04/11/94
Dilution Factor: 5.0

SEMIVOLATILE TCLP COMPOUNDS

CAS Number		UG/L	CAS Number	<u>mg/l</u>	UG/L
106-46-7	1,4-Dichlorobenzene	50 U		0.050 u	
67-72-1	Hexachloroethane	50 U		0.050 u	
98-95-3	Nitrobenzene	50 U		0.050 u	
87-68-3	Hexachlorobutadiene	50 U		0.050 u	
88-06-2	2,4,6-Trichlorophenol	50 U		0.050 u	
95-95-4	2,4,5-Trichlorophenol	50 U		0.050 u	
121-14-2	2,4-Dinitrotoluene	50 U		0.050 u	
118-74-1	Hexachlorobenzene	50 U		0.050 u	
87-86-5	Pentachlorophenol	250 U		0.250 u	
000-00-1	TOTAL METHYLPHENOL	50 U		0.050 u	
110-86-1	PYRIDINE	250 U		0.250 u	

The Lab ID for data on this page is 0020411D.

Form I

REVIEWED BY: K.
DATE: 4/12/94

8B
SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: IT PITTSBURGH

Contract: 305933

Lab Code: ITPA Case No.: YORK33

SAS No.: 0027^A SDG No.: YORKTO

Lab File ID (Standard): C200411D

Date Analyzed: 04/11/94

Instrument ID: HP59722

Time Analyzed: 0950

	IS1 (DCB)		IS2 (NPT)		IS3 (ANT)	
	AREA #	RT	AREA #	RT	AREA #	RT
=====	=====	=====	=====	=====	=====	=====
12 HOUR STD	154577	11.30	537348	13.91	262108	17.57
=====	=====	=====	=====	=====	=====	=====
UPPER LIMIT	309154		1074696		524216	
=====	=====	=====	=====	=====	=====	=====
LOWER LIMIT	77288		268674		131054	
=====	=====	=====	=====	=====	=====	=====
EPA SAMPLE						
NO.						
=====	=====	=====	=====	=====	=====	=====
01 BLKTCLPMS	138000	11.29	466000	13.92	230000	17.57
02 PBTCCLP	150000	11.29	507000	13.92	246000	17.57
03 WFO01	153000	11.30	510000	13.90	253000	17.57
04 WFO01MS	142000	11.29	486000	13.90	241000	17.57
05 WFO02	153000	11.29	510000	13.92	253000	17.57
06 WFO03	146000	11.29	491000	13.92	241000	17.57
07 WFO04	151000	11.29	507000	13.90	252000	17.57
08 SBLK1	168000	11.29	553000	13.90	274000	17.57
=====	=====	=====	=====	=====	=====	=====

IS1 (DCB) = 1,4-Dichlorobenzene-d4

IS2 (NPT) = Naphthalene-d8

IS3 (ANT) = Acenaphthene-d10

UPPER LIMIT = + 100%

of internal standard area.

LOWER LIMIT = - 50%

of internal standard area.

Column used to flag internal standard area values with an asterisk

8C
SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: IT PITTSBURGH

Contract: 305933

Lab Code: ITPA Case No.: YORK33

SAS No.: 0028^A SDG No.: YORKTO

Lab File ID (Standard): C200411D

Date Analyzed: 04/11/94

Instrument ID: HP59722

Time Analyzed: 0950

	IS4 (PHN)		IS5 (CRY)		IS6 (PRY)	
	AREA #	RT	AREA #	RT	AREA #	RT
=====	=====	=====	=====	=====	=====	=====
12 HOUR STD	394567	20.69	322012	26.21	378351	29.46
=====	=====	=====	=====	=====	=====	=====
UPPER LIMIT	789134		644024		756702	
=====	=====	=====	=====	=====	=====	=====
LOWER LIMIT	197284		161006		189176	
=====	=====	=====	=====	=====	=====	=====
EPA SAMPLE						
NO.						
=====	=====	=====	=====	=====	=====	=====
01 BLKTCLPMS	341000	20.69	301000	26.21	331000	29.46
02 PBTCCLP	373000	20.69	317000	26.21	353000	29.47
03 WP001	380000	20.69	325000	26.21	352000	29.46
04 WP001MS	362000	20.69	309000	26.21	349000	29.46
05 WP002	377000	20.69	324000	26.21	356000	29.46
06 WP003	367000	20.69	312000	26.21	351000	29.46
07 WP004	374000	20.69	323000	26.21	351000	29.46
08 SBLK1	413000	20.69	356000	26.21	400000	29.47
=====	=====	=====	=====	=====	=====	=====

IS4 (PHN) = Phenanthrene-d10

IS5 (CRY) = Chrysene-d12

IS6 (PRY) = Perylene-d12

UPPER LIMIT = + 100%

of internal standard area.

LOWER LIMIT = - 50%

of internal standard area.

Column used to flag internal standard area values with an asterisk

TCLP Pesticide Analysis

0029 A

Client Sample ID: WP001
Sample Date: 03/29/94
Lab Sample ID: Q40337901
TCLP Extraction Date: 04/04/94
Extraction Date: 04/06/94
Analysis Date: 04/08/94

Compound	Concentration mg/L
Chlordane	ND0.0014
Endrin	ND0.0006
Heptachlor	ND0.0003
Heptachlor epoxide	ND0.0008
gamma-BHC (Lindane)	ND0.0004
Methoxychlor	ND0.005
Toxaphene	ND0.01

	Surrogate Spike Percent Recovery
Tetrachlorometaxylene	91%
Dibutylchlorendate	95%

TCLP Pesticide Analysis

0030A

Client Sample ID: WP002
Sample Date: 03/29/94
Lab Sample ID: Q40337903
TCLP Extraction Date: 04/04/94
Extraction Date: 04/06/94
Analysis Date: 04/08/94

Compound	Concentration mg/L
Chlordane	ND0.0014
Endrin	ND0.0006
Heptachlor	ND0.0003
Heptachlor epoxide	ND0.0008
gamma-BHC (Lindane)	ND0.0004
Methoxychlor	ND0.005
Toxaphene	ND0.01

	Surrogate Spike Percent Recovery
Tetrachlorometaxylene	98%
Dibutylchlorendate	97%

TCLP Pesticide Analysis

0031A

Client Sample ID: WP003
Sample Date: 03/29/94
Lab Sample ID: Q40337904
TCLP Extraction Date: 04/04/94
Extraction Date: 04/06/94
Analysis Date: 04/08/94

Compound	Concentration mg/L
Chlordane	ND0.0014
Endrin	ND0.0006
Heptachlor	ND0.0003
Heptachlor epoxide	ND0.0008
gamma-BHC (Lindane)	ND0.0004
Methoxychlor	ND0.005
Toxaphene	ND0.01

	Surrogate Spike Percent Recovery
Tetrachlorometaxylene	100%
Dibutylchloredate	102%

TCLP Pesticide Analysis

0032A

Client Sample ID: WP004
Sample Date: 03/29/94
Lab Sample ID: Q40337905
TCLP Extraction Date: 04/04/94
Extraction Date: 04/06/94
Analysis Date: 04/08/94

Compound	Concentration mg/L
Chlordane	ND0.0014
Endrin	ND0.0006
Heptachlor	ND0.0003
Heptachlor epoxide	ND0.0008
gamma-BHC (Lindane)	ND0.0004
Methoxychlor	ND0.005
Toxaphene	ND0.01

	Surrogate Spike Percent Recovery
Tetrachlorometaxylene	89%
Dibutylchlorendate	33%

TCLP Pesticide Analysis

0033A

Lab Sample ID: TCLP Preparation Blank
TCLP Extraction Date: 04/04/94
Extraction Date: 04/06/94
Analysis Date: 04/08/94

Compound	Concentration mg/L
Chlordane	ND0.0014
Endrin	ND0.0006
Heptachlor	ND0.0003
Heptachlor epoxide	ND0.0008
gamma-BHC (Lindane)	ND0.0004
Methoxychlor	ND0.005
Toxaphene	ND0.01

	Surrogate Spike Percent Recovery
Tetrachlorometaxylene	93%
Dibutylchloredate	99%

TCLP Pesticide Analysis

0034A

Lab Sample ID: Method Blank

Extraction Date: 04/06/94

Analysis Date: 04/08/94

Compound	Concentration mg/L
Chlordane	ND0.00014
Endrin	ND0.00006
Heptachlor	ND0.00003
Heptachlor epoxide	ND0.00008
gamma-BHC (Lindane)	ND0.00004
Methoxychlor	ND0.0005
Toxaphene	ND0.001

	Surrogate Spike Percent Recovery
Tetrachlorometaxylene	80%
Dibutylchlorendate	94%

TCLP Pesticide Analysis

0035 A

Lab Sample ID: Laboratory Control Sample

Compound	Matrix Spike Percent Recovery
Chlordane	104%
Endrin	84%
Heptachlor	92%
Heptachlor epoxide	90%
gamma-BHC (Lindane)	98%
Methoxychlor	101%
Toxaphene	87%
	Surrogate Spike Percent Recovery
Tetrachlorometaxylene	100%
Dibutylchlorendate	103%

TCLP Pesticide Matrix Spike Percent Recovery

0036 A

Client Sample ID: WP001

Compound	Matrix Spike Percent Recovery
----------	----------------------------------

Chlordane	108%
Endrin	133%
Heptachlor	82%
Heptachlor epoxide	81%
gamma-BHC (Lindane)	86%
Methoxychlor	101%
Toxaphene	101%

	Surrogate Spike Percent Recovery
--	-------------------------------------

Tetrachlorometaxylene	94%
Dibutylchloredate	100%

TCLP Herbicide Analysis

0037A

Client Sample ID: WP001
Sample Date: 03/29/94
Lab Sample ID: Q40337901
TCLP Extraction Date: 04/04/94
Extraction Date: 04/06/94
Analysis Date: 04/08/94

Parameter

Concentration
mg/L

2,4-D

ND0.015

Silvex

ND0.015

Surrogate Spike
Percent Recovery

Dichlorophenylaceticacid

96%

TCLP Herbicide Analysis

00384

Client Sample ID: WP002
Sample Date: 03/29/94
Lab Sample ID: Q40337903
TCLP Extraction Date: 04/04/94
Extraction Date: 04/06/94
Analysis Date: 04/08/94

Parameter	Concentration mg/L
2,4-D	ND0.015
Silvex	ND0.015

	Surrogate Spike Percent Recovery
Dichlorophenylaceticacid	93%

TCLP Herbicide Analysis

0039A

Client Sample ID: WP003
Sample Date: 03/29/94
Lab Sample ID: Q40337904
TCLP Extraction Date: 04/04/94
Extraction Date: 04/06/94
Analysis Date: 04/08/94

Parameter	Concentration mg/L
2,4-D	ND0.015
Silvex	ND0.015

	Surrogate Spike Percent Recovery
Dichlorophenylaceticacid	101%

TCLP Herbicide Analysis

0040A

Client Sample ID: WP004
Sample Date: 03/29/94
Lab Sample ID: Q40337905
TCLP Extraction Date: 04/04/94
Extraction Date: 04/06/94
Analysis Date: 04/08/94

Parameter	Concentration mg/L
2,4-D	ND0.015
Silvex	ND0.015

	Surrogate Spike Percent Recovery
Dichlorophenylaceticacid	98%

TCLP Herbicide Analysis

0041A

Lab Sample ID: TCLP Preparation Blank
TCLP Extraction Date: 04/04/94
Extraction Date: 04/06/94
Analysis Date: 04/08/94

Parameter	Concentration mg/L
2,4-D	ND0.015
Silvex	ND0.015

	Surrogate Spike Percent Recovery
Dichlorophenylaceticacid	84%

TCLP Herbicide Analysis

0042A

Lab Sample ID: Method Blank
Extraction Date: 04/06/94
Analysis Date: 04/08/94

Parameter

Concentration
mg/L

2,4-D

ND0.0015

Silvex

ND0.0015

Surrogate Spike
Percent Recovery

Dichlorophenylaceticacid

84%

TCLP Herbicide Analysis

0043A

Lab Sample ID: Laboratory Control Sample

Parameter	Matrix Spike Percent Recovery
2,4-D	85%
Silvex	81%

	Surrogate Spike Percent Recovery
Dichlorophenylaceticacid	97%

TCLP Herbicide Matrix Spike Percent Recovery

0044A

Client Sample ID: WP001

Parameter	Matrix Spike Percent Recovery
-----------	----------------------------------

2,4-D	77%
-------	-----

Silvex	76%
--------	-----

	Surrogate Spike Percent Recovery
--	-------------------------------------

Dichlorophenylaceticacid	94%
--------------------------	-----

April 14, 1994

INTERNATIONAL TECHNOLOGY CORPORATION

CASE NARRATIVE

0001A

Laboratory Name: ITAS Pittsburgh, Pennsylvania
Project Name: NEESA Yorktown
Project Number: 305933
Work Order Number: Q403379
Data Package: Metals
Method: TCLP

Sample Number:

WP001
WP002

WP003
WP004

Shipment

Four soil samples were received at the ITAS Pittsburgh Laboratory on March 31, 1994, for TCLP extraction followed by metals analysis.

Results were determined in accordance with Methods 3010 and 6010, Test Methods for Evaluating Solid Waste, EPA SW-846, 3rd ed., 1986; and Federal Register, Vol. 57, No. 227, Tuesday, November 24, 1992.

Metals

A matrix spike was performed on sample WP001. A serial dilution was performed on sample WP004.

The TCLP Matrix Spike A recovery exceeded the 75 to 125 percent control limit for barium. All associated results were flagged with an "N" qualifier.

The matrix spike and matrix spike duplicate digestion recoveries exceeded the 75 to 125 percent control limit for silver. All associated results were flagged with a "N" qualifier.

Due to the sample matrix, samples WP001, WP002, and WP003 were received with headspace. TCLP Zero Headspace requires no headspace in sample prior to extraction.

I certify that this data package is in compliance with terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or his designee as verified by the following signature.


Carrie L. Smith-Gamber, Project Manager


Date

[illegible]

Comments:

Name: CHRIS L. SMITH - GAMER
Title: Project Manager

7/88

REVIEWED BY: AW
DATE: 4/7/94

● Name: ITAS_PITTSBURGH

Contract: YORKTOWN

0003A FBTCLE

Lab Code: 1TFA

Case No. : 305933

SAS No. :

SDG No. : WF001

Matrix (soil/water): WATER

Lab Sample ID: FB-TCLP

Level (low/med): LOW

Date Received: 03/31/94

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

[illegible]

Color Before: _____

Clarity Before: _____

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

Contract: YORKTOWN

00041 WF001

SDG No. : WF001

Lab Sample ID: Q40337901

Date Received: 03/31/94

Concentration Units (ug/L or mg/kg dry weight): UG/L_

7/88

Contract: YORKTOWN

00064 WF 003

Concentration Units (ug/L or mg/kg dry weight): UG/L_

[illegible]

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

Name: ITAS_PITTSBURGH

Contract: YORKTOWN

0007A WF004

Lab Code: 1TPA__

Case No. : 305933

SAS No. :

SDG No. : WF001_

Matrix (soil/water): WATER

Lab Sample ID: Q40337905

Level (low/med): LOW

Date Received: 03/31/94

% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

[illegible]

Color Before: _____

Clarity Before: _____

Texture: _____

Color After: _____

Clarity After: _____

Artifacts: _____

Comments:

0008A

Lab Name: ITAS_PITTSBURGH_____

Contract: YORKTOWN__

Lab Code: ITFA__

Case No. : 305933

SAS No. : _____

SDG No. : WF001_

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L_

[illegible]

0009

Lab Name: ITAS PITTSBURGH

Contract: YORKTOWN

Lab Code: ITPA

Case No.: 305933 SAS No.:

SDG No. : WF001

Preparation Blank Matrix (soil/water): _____

Preparation Blank Concentration Units (ug/L or mg/kg): _____

[illegible]

00101/4

WF001SA

L Name: ITAS PITTSBURGH

Contract: YORKTOWN

Lab Code: ITFA

Case No. : 305933

SAS No. :

SDG No. : WF001

Matrix (soil/water): WATER

Level (low/med): LOW

% Solids for Sample: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

[illegible]

Comments:

0011A

WF0015B

Name: ITAS PITTSBURGH

Contract: YORKTOWN

Lab Code: ITFA

Case No. : 305933

SAS No. :

SDG No. : WF001

Matrix (soil/water): WATER

Level (low/med): LOW

% Solids for Sample: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

[illegible]

Comments:

EPA SAMPLE NO.

0012

WF0013

● Name: ITAS_PITTSBURGH

Contract: YORKTOWN

Lab Code: ITPA__ Case No.: 305933 SAS No.: _____ SDG No.: WFO01__

Matrix (soil/water): WATER_ Level (low/med): LOW_

% Solids for Sample: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

[illegible]

Comments:

0013A

WF001SD

Name: ITAS_PITTSBURGH

Contract: YORKTOWN

Lab Code: ITFA

Case No. : 305933

SAS No. :

SDG No. : WF001

Matrix (soil/water): WATER_

Level (low/med): LOW

4 Solids for Sample: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

[illegible]

Comments:

● Name: ITAS_PITTSBURGH

Contract: YORK TOWN

N 00144 WF00150

Lab Code: ITFA

Case No. : 305933

SAS No. : _____

SDG No. : WFO001

Matrix (soil/water): WATER

Level (low/med): LOW

% Solids for Sample: 0.0

% Solids for Duplicate: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

[illegible]

Name: ITAS PITTSBURGH Contract: YORKTOWN 1

Lab Code: ITPA Case No.: 305933 SAS No.: SDG No.: WF001

Matrix (soil/water): WATER Level (low/med): LOW

Concentration Units: ug/L

[illegible]

April 13, 1994

INTERNATIONAL TECHNOLOGY CORPORATION

CASE NARRATIVE

0001A

Laboratory Name: ITAS Pittsburgh, Pennsylvania
Project Name: NEESA - Yorktown
Project Number: 305933
Work Order Number: Q403379
Data Package: General Chemistry

Sample Number:

WP001

WP003

WP005

WP002

WP004

Shipment

Five samples were received at the ITAS Pittsburgh Laboratory on March 31, 1994, for reactivity, corrosivity, ignitability, and asbestos analysis.

The sample for asbestos was sent to R. J. Lee for analysis. These results are enclosed.

General Chemistry

The analysis performed were reactivity, corrosivity, and ignitability by Method 9045, Sections 7.1.2.2, 7.3.4.1, and 7.3.4.2, Test Methods for Evaluating Solid Waste, EPA SW-846, 3rd ed., 1986.

A duplicate was performed on sample WP004 for ignitability and corrosivity.

A duplicate and matrix spike were performed on samples WP001 and WP004 for reactivity.

I certify that this data package is in compliance with terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or his designee as verified by the following signature.



Carrie L. Smith-Gamber, Project Manager



Date

0002A

General Chemistry Analysis

Analysis Date	Client Sample ID	Lab Sample ID	Cyanide, Reactive mg/Kg	Matrix Spike Percent Recovery
04/06/94	WP001	Q40337901	ND250	--
04/06/94	WP002	Q40337903	ND250	--
04/06/94	WP003	Q40337904	ND250	--
04/06/94	WP004	Q40337905	ND250/ND250	0.3%
04/06/94	--	Method Blank	ND250	--

Analysis Date	Client Sample ID	Lab Sample ID	Sulfide, Reactive mg/Kg	Matrix Spike Percent Recovery
04/05/94	WP001	Q40337901	ND500/ND500	0.8%
04/05/94	WP002	Q40337903	ND500	--
04/05/94	WP003	Q40337904	ND500	--
04/05/94	WP004	Q40337905	ND500	--
04/05/94	--	Method Blank	ND500	--

* Results were determined by methodologies specified in SW-846, 3rd edition, 1986. These methods are prone to failure in both accuracy and reproducibility, therefore, we cannot assume any liability for these results. The reported detection limits are the EPA action levels for this analysis.

0003 A

General Chemistry Analysis

Analysis Date	Client Sample ID	Lab Sample ID	Ignitability
04/04/94	WP001	Q40337901	> 140 °F Does not burn/ignite
04/04/94	WP002	Q40337903	> 140 °F Does not burn/ignite
04/04/94	WP003	Q40337904	> 140 °F Does not burn/ignite
04/04/94	WP004	Q40337905	> 140 °F Ignites, burns slowly, short period / > 140 °F Ignites, burns slowly, short period

Analysis Date	Client Sample ID	Lab Sample ID	pH
03/31/94	WP001	Q40337901	7.46
03/31/94	WP002	Q40337903	5.80
03/31/94	WP003	Q40337904	6.49
03/31/94	WP004	Q40337905	6.50/6.56

RJ LeeGroup, Inc.

350 Hochberg Road • Monroeville, PA 15146
412/325-1776 • FAX 412/733-1799

April 5, 1994

Ms. Carrie Smith
IT Corporation
5103 Old William Penn Highway
Export, PA 15632

RE: PLM Standard Analysis for Sample as Shown on Table I
Job Number AOH404492
Customer Purchase Order Number: 4610-95

Dear Ms. Smith:

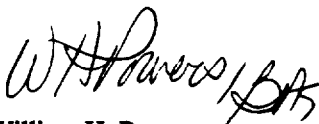
Enclosed are the results obtained from the asbestos identification for the above referenced sample. Analysis of the sample was made using the polarizing light microscope (PLM) and dispersion staining objective in accordance with guidelines set forth in the EPA Method for the Determination of Asbestos in Bulk Building Materials, U.S. EPA/600/R-93/116 (7/93 Edition).

RJ Lee Group, Inc. is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) for selected test methods for airborne asbestos fiber analysis (TEM) and asbestos fiber analysis (PLM). RJ Lee Group's Monroeville laboratory is accredited by the American Industrial Hygiene Association for asbestos, silica and metals.

These results are submitted pursuant to RJ Lee Group's current terms and conditions of sale, including the company's standard warranty and limitation of liability provisions and no responsibility or liability is assumed for the manner in which the results are used or interpreted. Unless notified in writing to return the samples covered by this report, RJ Lee Group will store the samples for a period of ninety (90) days before discarding. A shipping and handling fee will be assessed for the return of any samples.

If you have any questions on this report or if we can be of further assistance, please feel free to call me.

Sincerely yours,



William H. Powers
Manager, Bulk Materials Analysis

WHP/jpt

Enclosure

Table I

Polarized Light Analysis Results

4610-95

Project AOH404492

Sample Number	Client Sample Number	-----Asbestos-----							-----Nonasbestos-----					Run Date
		Chrysotile	Amosite	Crocidolite	Anthophyllite	Tremolite	Actinolite	Cellulose	Mineral Wool	Fibrous Glass	Synthetic Fibers	Other Fibers	Nonfibrous Material	
0477300BHPL	WP005-01	-	-	-	-	-	-	-	-	-	-	-	100 %	WP
White														4/4/94

00054

RJ Lee Group, Inc.
Headquarters

350 Hochberg Road
Monroeville, PA 15146

Page: 1 of 1

Authorized Signature
Date

W. Pinner

Monday, April 4, 1994

Phone (412) 325-1776
Fax (412) 733-1799



Reference Document No. **484142**
Page 1 of 1

Project Name/No. 1 Yorktown
Sample Team Members 2
Profit Center No. 3 4610
Project Manager 4 Carrie Smith
Purchase Order No. 6
Required Report Date 11 4/8/94

Samples Shipment Date 7 4/1/94
Lab Destination 8 RT Lee
Lab Contact 9 Bill Powers
Project Contact/Phone 12 412-731-8806
Carrier/Waybill No. 13 Hand Deliver

Bill to: ⁵ JAS Pitt
5103 Old Wm Penn Hwy
Cort PA 15632

Port to: ¹⁰ JAS Pitt
Carrie Smith

[illegible]

Special Instructions: 23

Possible Hazard Identification: 24

Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal: ²⁵

Return to Client ☐ Disposal by Lab ☐ Archive _____ (mos.)

Turnaround Time Required: 26

Normal ☐ Rush ☒

QC Level: 27

11.1 11.1

Project Specific (specify):

1. Relinquished by ²⁸
(Signature/Affiliation) 

by 28
Lenny K. K. K.

ITAS
PEH

Date: 4/1/94

Time: 2:35 PM

Date: _____

1. Received by 28
(Signature/Affiliation)

⁸ Kim Scott

Date: 4/1/94

Time: 2:30 PM

2. Received by
(Signature / Affiliation)

Date: _____
Time: _____

White: To accompany samples

Yellow: Field copy

*See back of form for special instructions

APPENDIX E

CONSTRUCTION SPECIFICATIONS

DEPARTMENT OF THE NAVY
ATLANTIC DIVISION, NAVAL FACILITIES ENGINEERING COMMAND
NAVAL STATION, NORFOLK, VIRGINIA

NEESA
RAC CONTRACT NUMBER
N47408-92-D-3045

N62470-93-B-3120

NAVFAC
SPECIFICATION
No. 05-93-3120

Appropriation: DERA

MINE CASINGS AND DEBRIS REMOVAL - SITES 2, 9, & 22

AT THE

NAVAL WEAPONS STATION
YORKTOWN, VIRGINIA

DESIGN BY:

Atlantic Division
Naval Facilities Engineering Command
1510 Gilbert Street
Norfolk, Virginia, 23511-2699

SPECIFICATION PREPARED BY:

Civil: E. J. Gallaher IV, P.E., Date: 25 June 1993

SPECIFICATION APPROVED BY:

Specification Branch Head: Melvin D. Mutter
M. D. Mutter, P.E.

Engineering and Design Division Director: W. H. Crone
W. H. Crone, P.E.

Environmental Quality Division Director: W. H. Russell
W. H. Russell, P.E.

Date: July 16, 1

ENCL (6)

CONTENTS

DIVISION

1. General Requirements

SECTION

01010 General Paragraphs

01561 Erosion and Sediment Control

2. Site Work

SECTION

02050 Demolition and Removal

02220 General Excavation, Filling, and Backfilling

02223 Transportation and Disposal of Contaminated Material

02571 Pavement Removal and Replacement

02950 Wetlands Area, Shrubs, Plants, and Grasses

DIVISIONS 03 THRU 16 NOT USED

SECTION 01010

GENERAL PARAGRAPHS

02/91

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to by the basic designation only.

1.1.1 ARMY CORPS OF ENGINEERS

COE EM 385-1-1 1992 Safety and Health Requirements Manual

1.1.2 MILITARY STANDARDS (MIL-STD)

MIL STD 461 (Rev C) (Notice 2) Electromagnetic Emission and
Susceptibility Requirements for the Control of
Electromagnetic Interference

MIL STD 462 (Notice 6) Measurement of Electromagnetic
Interference Characteristics

1.1.3 NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 241 1989 Safeguarding Construction, Alteration, and
Demolition Operations

1.1.4 Federal Acquisition Register (FAR) 52.212-3 and 52.228-5

1.1.5 ARARs

An ARAR, as defined, is an environmental law, regulation, or guideline that is either "applicable" or "relevant and appropriate" to a remedial action. "Applicable" requirements are those cleanup standards, standards of control, and other environmental protection requirements, criteria, or limitations, promulgated under Federal or State laws that specifically address chemicals/contaminants of concerns, remedial actions, locations of remediation, or other circumstances at a CERCLA-regulated site. "Relevant and appropriate" requirements are those which address problems or situations sufficiently similar to those encountered at a CERCLA-regulated site that their use is well suited to the particular site (Section 121 of CERCLA, 42 U.S.C. Section 9621 and 40 CFR Section 300.68(i)). The Navy intends to comply with CERCLA standards and the following regulations shall be considered as ARARs for the site.

1.1.6 Code of Federal Regulations:

40 CFR, Parts 260 to 280
40 CFR, Part 761
49 CFR, Parts 100 to 180

1.1.7 American Society for Testing and Materials (ASTM) Publications

D2488 1990 Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)

1.2 SUBMITTALS

Submit the following in accordance with Section C of the Basic Contract.
Copies of all submittals shall be submitted to distribution as indicated.

1.2.1 SD-18, Administrative or Close-out Submittals

- a. As Built Records
- b. Site Health and Safety Plan
- c. Environmental Protection Plan
- d. Environmental Conditions Report
- e. Network Analysis Diagram
- f. MIS Required Sorts
- g. Status Reports
- h. CQC Plan Addenda
- i. Testing Laboratory Qualifications
- j. CQC Meeting Minutes
- k. Non-Compliance Check-off List
- l. Test Results Summary Report
- m. Daily Report to Inspector
- n. CQC Report
- o. Submittal Status Log
- p. Permits
- q. Daily/Weekly Report Plan

1.3 GENERAL INTENTION

It is the declared and acknowledged intention and meaning to secure removal actions at Sites 2, 9, and 22, Naval Weapons Station, Yorktown, Virginia, complete and ready for use.

1.4 GENERAL DESCRIPTION

The work includes providing all labor, supervision, tools, materials, equipment and transportation necessary to remove and dispose of contaminated and noncontaminated materials at Sites 2, 9, and 22. Components of this project include: removal and disposal of mine casings, batteries, tires, scrap metal, drums, and other solid waste debris; erosion control; site restoration; and other related work.

1.5 DESCRIPTION OF CONTAMINANTS PRESENT

Identified contaminants at Site 2 includes mine casings, scrap metal, tires, and other solid waste debris exposed along the banks of Felgates Creek. Site 9 contaminants include similar solid waste contaminants. Site 22 contaminants include mine casings and other solid waste debris. Surface soils at all three sites are contaminated with the spilled contents from the various solid waste contaminants, and shall be left in place for remediation at a later date. The above list of contaminants may not be all inclusive.

1.6 LOCATION

The work shall be located at Site 2 (Turkey Road Landfill), Site 9 (Plant 1 Explosives Contaminated Wastewater), And Site 22 (Bypass Road Landfill), Naval Weapons Station, Yorktown, Virginia approximately as shown.

1.7 PROJECT INFORMATION

1.7.1 Drawings, Maps and Specifications

One set of contract drawings, maps and specifications will be furnished to the Contractor without charge, except applicable publications incorporated into the technical provisions by reference. Additional sets will be furnished on request at the cost of reproduction. The work shall conform to the following contract drawings and maps, all of which form a part of these specifications and are available in the office of the Contracting Officer.

<u>EFD Drawing No</u>	<u>NAVFAC Drawing No</u>	<u>Title</u>
358095	4258095	Vicinity & Location Maps, & Notes
358096	4258096	Site Plan - Site 2
358097	4258097	Site Plan - Site 22
358098	4258098	Site Plan - Site 9
358099	4258099	Details

1.7.2 Reference Reports

The following reference reports are available for examination in the office of the Contracting Officer and is intended only to show the existing con-

ditions. Report and drawings are the property of the Government and shall not be used for any purpose other than that intended by the specification.

Report

- a. "Remedial investigation Interim Report, Naval Weapons Station, Yorktown, VA"; Versar, Inc.; July, 1991.
- b. "Initial Assessment Study of Naval Weapons Station, Yorktown, Virginia"; NEESA 13-044; July, 1984.
- c. "Draft Geophysical Investigation for Sites 1, 2, 3, 4, 12, 16, 17, and 21"; Naval Weapons Station, Yorktown, VA; Baker (Roy F. Weston); July 1992.
- d. "Draft Round 1 Remedial Investigation Report, Sites 1-9, 11, 12, 16-19, and 21"; Naval Weapons Station, Yorktown, VA; Baker Environmental, Inc.; January 1993.

1.8 PROJECT SCHEDULE AND TIME CONSTRAINTS

1.8.1 Commencement, Prosecution, and Completion of Work (APR 84)

The Contractor shall be required to (a) commence work under this contract within 10 calendar days after the date the Contractor receives the notice to proceed, (b) prosecute the work diligently, and (c) complete the entire work ready for use not later than 180 calendar days after the required commencement of work.

1.9 SAFETY PROGRAM

In addition to safety requirements in the Basic Contract, the Contractor shall implement a safety program conforming to the requirements of Federal, state, and local laws, rules, and regulations. The program shall include, but is not limited to, the following:

- a. Occupational Safety and Health Standards
- b. COE EM-385-1-1
- c. Contract Clause entitled "Accident Prevention." In this clause, the date of COE EM-385-1-1 should be 1 October 1992.
- d. NFPA 241

PART 2 PRODUCTS - Not used

PART 3 EXECUTION

3.1 FACILITIES AND SERVICES

3.1.1 Availability of Utilities Services

Utilities will not be available to the Contractor during construction. Contractor is responsible for providing all necessary utilities.

3.1.2 Contractor's Storage Area

The clause of the Contract Clauses entitled "Operations and Storage Areas" and the following apply:

3.1.2.1 Storage in Existing Buildings

Storage in existing buildings will not be allowed.

3.1.2.2 Open Site Storage Size and Location

The open site available for storage shall be confined to the areas indicated by the RPM.

3.1.3 Trailers, Storage, and Temporary Buildings

Locate these where directed. Trailers or storage buildings will be permitted, where space is available subject to the approval of the Contracting Officer. The trailers or buildings shall be suitably painted, in good condition, free from visible damage rust and deterioration, and meet all applicable safety requirements. Trailers shall comply with all appropriate state and local vehicle requirements. Failure of the Contractor to maintain the trailers or storage buildings in good condition will be considered sufficient reason to require their removal. A sign not smaller than 24 inches by 24 inches shall be conspicuously placed on the trailer depicting the company name, business phone number, and emergency phone number. Trailers shall be anchored to resist high winds and must meet applicable state or local standards for anchoring mobile trailers.

3.1.3.1 Storage and Office Trailers

Provide a trailer of sufficient size for an office trailer work area and floor area for the exclusive use of the Contractor's Quality Control Representative. Also provide room in the same trailer for the Contractor Quality Control Records. Provide the Contractor's Quality Control representative with a 4-foot by 8-foot plan table, a standard size office desk and chair, and telephone service. Contractor quality control records shall be filed in the office and available at all times to the Government.

- a. Trailers must meet state law requirements and must be in good condition.
- b. Trailers shall be lockable and shall be locked when not in use.
- c. Trailers shall have a sign in lower left hand corner of left door of trailer with the following information: company name, address, registration number of trailer or vehicle identification number, location on base, duration of contract or stay on base, contract number, local on-base phone number, off-base phone number of main

3.2 RESTRICTIONS ON OPERATIONS

3.2.1 Scheduling

3.2.1.1 General Scheduling Requirements

The Contractor shall schedule the work as to cause the least amount of interference with station operations. Work schedules shall be subject to the approval of the Officer in Charge of Construction. Permission to interrupt station roads shall be requested in writing a minimum of 15 calendar days prior to the desired date of interruption.

3.2.1.2 Special Scheduling Requirements

- a. The Naval Weapons Station will remain in operation during the entire construction period and the Contractor shall conduct his operations so as to cause the least possible interference with the normal operations of the activity.
- b. Notify the ROICC 48 hours prior to starting demolition and excavation work.
- c. Maintenance of Traffic and Protection: The contractor shall conduct his construction operations in and adjacent to existing paved areas so as to create the least possible inconvenience to the traveling public. Except as specified otherwise, all existing traffic lanes shall be kept open for unobstructed traffic flow. Where new construction required breaking up existing pavement, and all traffic lanes cannot be kept open, one traffic lane of roadway may be temporarily closed. The contractor shall notify the Contracting Officer a minimum of 15 days in advance of each proposed closing date for all roadways. After reopening, patches in the traffic lanes shall be maintained as required to prevent bumps and depressions until the final paved surface is applied. Temporary patches shall be bituminous concrete.
- d. Barricades and Warning Signs: The contractor shall provide, erect, and maintain all necessary lighted barricades, danger signals, detour signs, and other warning signs; provide a sufficient number of watch men; and take all necessary precautions for the protection of the work, the safety of the public, and of the contractors personnel. Roadway lanes closed to traffic shall be protected by effective barricades, and suitable warning signs shall be provided.
- e. Utility Interruptions: Permission to interrupt any utility service shall be requested in writing at least 15 days in advance and approval of the Contracting Officer shall be received before any service is interrupted. Interruptions of utility services will only be allowed when they cause minimal or no interference with the operations of the activity, unless specified otherwise. Unless otherwise directed by the Contracting Officer, such interruptions will be permitted only after regular working hours or on the weekends; anticipated costs shall be included in the bid. Prior to requesting any outages, the contractor shall have at the job site, all materials and equipment required to perform the work involved

requesting any outages, the contractor shall have at the job site, all materials and equipment required to perform the work involved and shall demonstrate to the Contracting Officer his ability to complete the work and restore the service within the outage period specified or approved.

3.2.1.3 Regular Work Hours

The regular work hours for Naval Weapons Station are 0715 to 1545, Monday through Friday.

3.2.1.4 Work Outside Regular Hours

If the Contractor desires to carry on work outside regular hours or on Saturdays, Sundays or holidays, the Contractor shall submit an application to the Officer in Charge of Construction. The Contractor shall allow ample time to enable satisfactory arrangements to be made by the Government for inspecting the work in progress. At night, the Contractor shall light the different parts of the work in an approved manner.

3.2.2 Security Requirements

3.2.2.1 Personnel Information

A minimum of 5 working days prior to start of work, the Contractor shall furnish to the Naval Weapons Station (NWS) Yorktown, Security Department, via the NTR, the following information for contractor and subcontractor personnel required to enter the station:

- a. Name of the company
- b. Name of the employee
- c. Social Security Number
- d. Proof of U.S. Citizenship
- e. A completed Contractor/Vendor Criminal History Record Request
- f. A completed application

3.2.2.2 Proof of Citizenship

Proof of citizenship will consist of copies of birth certificates, military dependent ID card, or naturalization papers, which will be returned once entered in the security computer system. The security department will run a criminal history check on contractor employees and, as a condition of employment, each employee must willingly sign an authorization form allowing the security department to conduct the criminal check. Subject authorization form will be maintained on file by the security officer. Based on results of the criminal check and proof of U.S. citizenship, the security officer will or will not grant entry to the station. If entry is denied, the contractor will be immediately notified.

3.2.2.3 Contractor Responsibility for Employees

The Contractor is responsible for employees under his employment. Ensure that employees are familiar with and obey station traffic, safety, and security regulations.

.SUBPART

3.2.3.4 Motor Vehicle Operation

Ingress and egress of personnel will be subject to the security regulations of the station. Motor vehicles must comply with the codes of Virginia which are incorporated into the NWS Instruction 5510.5G, "Security and Traffic Regulations." Copies may be obtained from the NTR.

3.2.3 RESTRICTIONS ON EQUIPMENT

3.2.3.1 Electromagnetic Interference Suppression.

Electric motors shall comply with MIL-STD-461 relative to radiated and conducted electromagnetic interference. A test for electromagnetic interference will not be required for motors that are identical physically and electrically to those that have previously met the requirements of MIL-STD-461. An electromagnetic interference suppression test will not be required for electric motors without commutation or slip rings having no more than one starting contact and operated at 3,600 revolutions per minute or less.

Contractor's Equipment shall comply with MIL-S-16165 for internal combustion engines and MIL-STD-461 for other devices capable of producing radiated or conducted interference.

Conduct tests on electric motors and the Contractor's construction equipment in accordance with MIL-STD-461 and MIL-STD-462. The test location shall be reasonably free from radiated and conducted interference. Furnish the testing equipment, instruments, and personnel for making the tests; a test location; and other necessary facilities.

3.2.3.2 Radio Transmitter Restrictions

Conform to the restrictions and procedures for the use of transmitting equipment as directed. Do not use transmitters without prior approval.

3.3 ACTIONS REQUIRED OF THE CONTRACTOR

3.3.1 Location of Underground Facilities

Verify the elevation and location of existing piping, utilities, and any type of underground obstruction not indicated or specified to be removed but indicated in locations to be traversed during excavation.

3.3.2 Station Permits

Obtain station permits pursuant to paragraph entitled "Station Regulations." Permits are required for, but not necessarily limited to, welding, digging, and burning. Allow 7 calendar days for processing of the application.

3.5.5.1 Network Analysis Diagram

Within 20 days of issuance of the delivery order, submit a network analysis diagram in accordance which complies with Delivery Order #0001.

3.5.5.2 Status Reports

All status reports shall comply with the Delivery Order #0001. Submit a Technical Progress Report, Cost Performance Report, Modification Log, Time-Scaled Logic Diagram, Government Materials Tracking Report, Variance Analysis Report, and Waste Materials Report. Submit the first delivery order status report approximately 30 days after issuance of the delivery order. Thereafter, submit status reports every 16 days. Status report periods shall be consistent with the invoice reporting periods.

3.5.6 CQC Plan Addenda

Within 20 days of issuance of the delivery order, submit a CQC Plan Addenda which complies with Part 6 of the Basic Contract.

3.5.7 Testing Laboratory Qualifications

Within 20 days of issuance of the delivery order, submit Qualifications of each Laboratory which will be used. This submittals must comply with Part 6 of the Basic Contract.

3.5.8 CQC Meeting Minutes

The CQC Representative shall document all CQC meetings by delivering copies of the minutes to the NTR within 3 calendar days after each CQC meeting. The submittals shall comply with Section 6.5 of the Basic Contract.

3.5.9 Non-Compliance Checkoff List

The CQC Representative shall deliver a copy of the checkoff list of non-complying work items to the NTR on a monthly basis in accordance with Section 6.9.4 of the Basic Contract.

3.5.10 Test Results Summary Report

A summary report of all field tests containing both "required" and "actual" results plus "passed" or "failed" for conforming, non-conforming and repeated test results shall be submitted to the NTR at the end of each month in accordance with Section 6.10.1. of the Basic Contract.

3.5.11 Daily Report to Inspector (DRI)

The DRI shall be prepared and submitted daily to the CQC Representative in accordance with Section 6.11.1 of the Basic Contract.

3.5.12 CQC Report

The CQC Report shall be submitted by the CQC Representative to the NTR every day work is performed, material is delivered, direction is pending,

or a labor force is present in accordance with Sections 6.11.2 and 6.11 of the Basic Contract.

3.5.13 Submittal Status Log

The CQC Representative shall submit a completed Submittal Status Log to document quality control for materials, inspection and testing in accordance with Part 6.0 of the Basic Contract.

3.5.14 Permits

Within 15 days of issuance of the delivery order, submit draft copies of the following permits required for onsite activities:

- a. Evacuation Permit; from the Public Works Officer, Utilities Division

3.5.15 Contractor's Closeout Report

Submit upon completion of the project. This report shall include: Introduction, Summary of Action, Final Health and Safety Report, Summary of Record Documents, Field Changes and Contract Modifications, Final Documents, Summary of Chemical and Geotechnical Testing, Offsite Disposition of Materials, and QC Summary Report.

3.6 REQUIRED INSURANCE

3.6.1 Minimum Coverage

The Contractor shall procure and maintain during the entire period of performance under this contract the following minimum insurance coverage:

<u>Type of Insurance</u>	<u>Per Person</u>	<u>Per Occurrence</u>	<u>Occurrence</u>
1. Comprehensive Gen'l Liability		\$500,000	
2. Automobile Liability	\$200,000	\$500,000	\$20,000

3. Workmen's Compensation: As required by Federal and State Workmen's compensation and occupational disease statutes.

4. Employer's Liability Coverage: \$100,000 except in states where workmen's compensation may not be written by private carrier.

5. Other: As required by state law.

3.6.2 Insurance - Work on a Government Installation (Sept 1989)

a. The Contractor shall, at its own expense, provide and maintain during the entire performance period of this contract at least the kinds and minimum amounts of insurance required in the Schedule or elsewhere in the contract.

b. Before commencing work under this contract, the Contractor shall certify to the Contracting Officer in writing that the required insurance has been obtained. The policies evidencing required insurance shall contain an endorsement to the effect that any cancellation or any material change adversely affecting the Government's interest shall not be effective (1) for such period as the laws of the State in which this contract is to be performed prescribe or (2) until 30 days after the insurer or the Contractor gives written notice to the Contracting Officer, whichever period is longer.

c. The Contractor shall insert the substance of this clause, including this paragraph c, in subcontracts under this contract that require work on a Government installation and shall require subcontractors to provide and maintain the insurance required in the Schedule or elsewhere in the contract. The Contractor shall maintain a copy of all subcontractor's proof of required insurance, and shall make copies available to the Contracting Officer upon request (FAR 52.228-5)

3.7 FIELD SURVEY OF EXISTING SITE

Provide all labor, equipment, and materials required to provide a detailed site survey of the existing site with horizontal and vertical control established for reuse during construction. The survey shall show contours to a one foot interval, existing utilities, structures, wetlands areas, and drainage features. Submit the survey to distribution by express mail.

3.8 PRECONSTRUCTION SUBMITTALS

3.8.1 GENERAL

Provide a work plan and shop drawings as specified below. Submit one work plan, and a separate set of shop drawings as a complete package to distribution by express mail.

3.8.2 WORK PLAN

Submit a work plan which explains how the remediation is to be accomplished. The work plan shall include as a minimum: objectives of the project, schedule indicating sequence of events, verification sampling plan, decontamination procedures, a site specific Quality Assurance Project Plan, and a complete set of technical specifications which shall be developed by modifying the specifications included with the requirements package. Contact Mr. Melvin Mutter, Code 406, Specifications Branch, Engineering & Design Division, Atlantic Division, NAVFACENGCOM, (804) 444-9906, for availability of guide specification sections for those sections required for the work plan but not included in The Requirements Package.

3.8.3 SHOP DRAWINGS

a. Proposed location of temporary laydown area

b. Final Grading Plan: Provide a proposed construction grading plan to reestablish the site after the removal action. Indicate where seeding

is to be provided in accordance with the construction specifications.

- c. Erosion and Sediment Control Plan: Provide locations and construction of all erosion control structures. The drawings shall indicate minimum erosion control requirements and shall be site adapted and modified to suit the sequence of construction. The erosion control structures shall be designed to accomodate the runoff of a local 10 year storm. The following publication shall be used as a guide for developing the contractor furnished plan: Virginia Erosion and Sediment Control Handbook by the Virginia Soil and Water Conservation Commission. As a minimum, the contractor furnished erosion and sediment control plan shall indicate the following: clearing limits; areas affected by new construction; grading sequence shown with installation sequence of temporary and permanent erosion control features; type, size, and location of temporary erosion control features.
- d. Wetlands Reestablishment Plan: From the survey drawing, submit a drawing indicating the reestablishment plan area. Provide for reestablishing the original "Wetlands Area" delineated on the survey drawings. Indicate a schedule for planting wetlands plants on the drawings, as specified in the construction specifications.

3.9 REVIEW COMMENTS

Contractor submittals will be reviewed, and review comments on submittals shall be resolved, and submittals modified as required. After the corrections of the submittals, submit a corrected final copy of all submittals to distribution by express mail.

-- End of Section --

SECTION 01561

EROSION AND SEDIMENT CONTROL

07/92

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

FEDERAL SPECIFICATIONS (FS)

FS O-F-241 (Rev.D) Fertilizers; Mixed, Commercial

U.S. ARMY CORPS OF ENGINEERS (CW) PUBLICATIONS

CW 02215 1977 Plastic Filter Fabric

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A185 1985 Steel Welded Wire, Fabric, for Concrete Reinforcement

ASTM D98 1987 Calcium Chloride

ASTM D1682 1964 (Rev.1985) Breaking Load and Elongation of Textile Fabrics

ASTM D3786 1987 Hydraulic Bursting Strength of Knitted Goods and Nonwoven Fabrics - Diaphragm Bursting Strength Tester Method

VIRGINIA DEPARTMENT OF TRANSPORTATION (VDOT)

VDOT RBS 1987 Road and Bridge Specifications

VIRGINIA SOIL AND WATER CONSERVATION COMMISSION (VSWCC)

VSWCC VESCH 1992 Virginia Erosion and Sediment Control Handbook

1.2 DESCRIPTION OF WORK

The work includes the provision of temporary erosion control measures to prevent the pollution of air, water, and land within the project limits and in areas outside the project limits where work is accomplished in conjunction with the project. Installation of temporary erosion control features shall be coordinated with the construction of permanent erosion control features to assure effective and continuous control of erosion and pollution. Provide and maintain erosion control measures in accordance with VSWCC VESCH.

1.3 SUBMITTALS

Submit the following in accordance with Attachment 7 of the Basic Contract.

1.3.1 SD-02, Manufacturer's Catalog Data

- a. Sediment Fence
- b. Dust Suppressors

1.3.2 SD-04, Drawings

- a. Erosion Control Plan G

1.3.2.1 Erosion Control Plan

Submit, for approval, four copies of a Contractor furnished erosion and sediment control plan to the Resident Officer in Charge of Construction, a minimum of 14 days prior to start of construction. The plans shall not be a reproduction of the contract documents. The erosion and sediment control plan shall indicate minimum erosion control requirements and shall be site adapted and modified to suit the sequence of construction operations. As a minimum, the Contractor furnished erosion and sediment control plan shall indicate the following:

- a. New construction and existing construction affected by new construction
- b. Grading sequence shown with installation sequence of temporary and permanent erosion control features
- c. Type, size, and location of temporary erosion control features.

1.3.2.2 General Guidance

Design to accommodate the runoff of a local 10 year storm. The following publications shall be used as a guide for developing the Contractor furnished plan:

- a. Guide for sediment control on construction sites - USDA Soil Conservation Service
- b. Processes, Procedures, and Methods To Control Pollution Resulting From All Construction Activity - EPA
- c. Guidelines for erosion and sediment control planning and implementation - EPA.
- d. VSWCC VESCH

PART 2 - PRODUCTS

2.1 Sediment Fence

2.1.1 Posts

4 inch by 4 inch wood posts, minimum 3 inch diameter wood, or 1.33 pound per linear foot steel posts. Posts shall be minimum 6 feet long.

2.1.2 Wire Fabric

ASTM A185, 6 by 6, minimum 12-1/2 gage.

2.1.3 Filter Fabric

A woven or nonwoven polypropylene, nylon, or polyester containing stabilizers and/or inhibitors to make the fabric resistant to deterioration from ultraviolet, and with the following properties:

- | | |
|---|------------|
| a. Minimum grab tensile strength (ASTM D1682) | 100 pounds |
| b. Minimum grab elongation (ASTM D1682) | 25 percent |
| c. Minimum mullen burst strength (ASTM D3786) | 210 psi |
| d. E.O.S. (CW 02215) | 20-100 |

2.1.4 Standard Catalog Product

A manufacturer's standard catalog product for a preassembled sediment fence may be provided in lieu of the indicated sediment fence except that the filter fabric shall be as specified, and the height of the structure shall be as indicated.

2.2 STRAW BALES

Constructed from grain straw or hay with each bale bound together with binding wire or twine. Posts shall be reinforcing bars, 2 inch by 2 inch wood posts, 1-1/2 inch diameter wood post or 1.0 pound per linear foot steel posts.]

2.3 TEMPORARY SEEDING

2.3.1 Seed

State certified seed of the latest season's crop. Provide seed as specified in Part 3 - Execution.

2.3.2 Fertilizer

FS O-F-241, Type I, Class 2, with 10 percent nitrogen, 20 percent available phosphoric acid, and 10 percent potash.

2.3.3 Mulch

Hay or straw. Provide in an air dried condition for placement with commercial mulch blowing equipment.

2.4 GRAVEL FOR CONSTRUCTION ENTRANCE

VDOT RBS, Section 203, Size No. 1.

2.5 DUST SUPPRESSORS

ASTM D98 calcium chloride, magnesium chloride, or other standard manufacturer's products designed for dust suppression.

PART 3 - EXECUTION

3.1 SEDIMENT FENCE

Install posts a maximum of 6 feet on center, and at an angle between 2 degrees and 20 degrees towards the potential silt load area. The height of the filter barrier shall be a minimum of 15 inches and shall not exceed 18 inches. The height of the silt fence shall not exceed 36 inches. Do not attach filter fabric to existing tree. Secure filter fabric to the post and wire fabric using staples, tie wire, or hog rings. Imbed the filter fabric into the ground as indicated. Splice filter fabric at support pole using a 6 inch overlap and securely seal. Top of the filter fabric shall have a 1 inch tuck or a reinforced top end section.

3.2 STRAW BALES

Straw bales shall not be used in lieu of any other erosion control devices specified herein. Embed the bottom row of bales in a 4 inch deep trench and place straw bales tightly abutting each other. Bales shall be placed so the binding are horizontally oriented around the bales, wire adjoining bales together. Anchor each bale with two stakes, driving the first stake towards the previously laid bale. Wedge straw in gaps between straw bales. After the bales are staked, the excavated soil from the trench shall be backfilled against the straw bales to ground level on the downhill side and to 4 inches above ground level on the uphill side.

3.3 TEMPORARY SEEDING

Within 48 hours after attaining the grading increment specified herein, provide seed, fertilizer, and mulch on graded areas when any of the following conditions occur:

- a. Grading operations stop for an anticipated duration of 30 days or more.
- b. Provide on the slopes of cuts and fill slopes for every 5 foot increment of vertical height of the cut or fill.
- c. When it is impossible or impractical to bring an area to finish grade so that permanent seeding operations can be performed without serious disturbance from additional grading.

- d. When an immediate cover is required to minimize erosion, or when erosion has occurred.
- e. Provide on erosion control devices constructed using soil materials.

3.3.1 General

Loosen subgrade to a minimum depth of 4 inches. Uniformly apply the seed, fertilizer, and mulch at the specified application rates. Roll the seeded area after applying seed and fertilizer. Do not seed or fertilize when the Contracting Officer determines conditions are unfavorable. Provide water to promote turf growth.

3.3.2 Seed

Provide seed type and quantity (pounds per acre) as follows:

SEED TYPE	Feb 1 - Apr 15		
	Nov 16 - Jan 31	Oct 16 - Nov 15	Apr 16 - Oct 15
Hybrid Fescue	200	200	
Red Top	6	6	6
Bermuda	45 (unhulled)	45 (unhulled)	100 (hulled)

3.3.3 Fertilizer

Apply at the rate of 1000 pounds per acre.

3.3.4 Mulch

Spread mulch at the rate of 1.5 tons per acre and anchor by crimping mulch with a disc.

3.4 GRAVEL CONSTRUCTION ENTRANCE

Provide a minimum 50 feet long, 20 feet wide entrance, a minimum of 6 inches thick, at points of vehicular ingress and egress on the construction site.

3.5 DUST SUPPRESSORS

Immediately dampen the surface before calcium chloride application. Apply dust suppressors on unsurfaced base, subbase and other unsurfaced travel ways at the rate between 1.0 and 1.25 pounds per square yard of surface for pellets for the initial application. For subsequent applications of dust suppressors, application rates may be approximately 75 percent of initial application rates. Do not apply when raining or the moisture conditions exceed that required for proper application. Apply other dust suppressors in accordance with manufacturers instructions. Protect treated surfaces from traffic for a minimum of 2 hours after treatment. Repeat application of dust suppressors as required to control dust emissions.

3.6 MAINTENANCE AND INSPECTION

Inspect erosion control devices after each rainfall and daily during prolonged rainfall. Remove sediment deposits after each rainfall or when sediment reaches approximately one-half the barrier height. Immediately repair damaged erosion control devices and damaged areas around and underneath the devices. Maintain erosion control devices to assure continued performance of their intended function. Modify the Contractor furnished erosion control plan as required to control problem areas noticed after each inspection.

3.7 CLEAN UP

At the completion of the job, or when directed or approved by the Contracting Officer, erosion control devices shall be removed. Erosion control devices and areas immediately adjacent to the device shall be filled (where applicable), shaped to drain and to blend into the surrounding contours, and finished as specified in Section 02220, "General Excavation, Filling, and Backfilling." Erosion control devices may remain in place when approved by the Contracting Officer.

--End of Section--

SECTION 02050

DEMOLITION AND REMOVAL
12/92

PART 1 GENERAL

1.1 REFERENCES

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI A10.6

1983 Demolition Operations - Safety
Requirements

1.2 GENERAL REQUIREMENTS

Do not begin demolition until authorization is received from the Contracting Officer. Remove rubbish and debris from the station daily. Store materials that cannot be removed daily in areas specified by the Contracting Officer.

1.3 REGULATORY AND SAFETY REQUIREMENTS

Comply with federal, state, and local hauling and disposal regulations. In addition to the requirements of the "Contract Clauses," safety requirements shall conform with ANSI A10.6, "Demolition Operations - Safety Requirements."

1.4 DUST CONTROL

Prevent the spread of dust and avoid the creation of a nuisance or hazard in the surrounding area. Do not use water if it results in hazardous or objectionable conditions such as, but not limited to, ice, flooding, or pollution.

1.5 PROTECTION

1.5.1 Traffic Control Signs

Where driver safety is endangered in the area of removal work, use traffic barricades with flashing lights.

1.5.2 Trees

Conform to Part C of the Basic Contract for protection of natural resources.

1.6 BURNING

Burning will not be permitted.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3 Paving and Slabs

Remove sawcut concrete and asphaltic concrete paving and slabs including aggregate base as necessary to accomplish removal of contaminants. Provide neat sawcuts at limits of pavement removal as indicated.

3.1 DISPOSITION OF MATERIAL

3.1.1 Title to Materials

Except where specified in other sections, all materials and equipment removed, and not reused, shall become the property of the Contractor and shall be removed from Government property. Title to materials resulting from demolition, and materials and equipment to be removed, is vested in the Contractor upon approval by the Contracting Officer of the Contractor's demolition and removal procedures, and authorization by the Contracting Officer to begin demolition. The Government will not be responsible for the condition or loss of, or damage to, such property after notice to proceed. Materials and equipment shall not be viewed by prospective purchasers or sold on the site.

3.2 CLEANUP

3.2.1 Debris and Rubbish

Remove and transport debris and rubbish in a manner that will prevent spillage on pavements, streets or adjacent areas.

-- End of Section --

SECTION 02220

GENERAL EXCAVATION, FILLING, AND BACKFILLING
06/92

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 75	1987 Sampling Aggregates
ASTM D 698	1978 (R 1990) Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5-lb (2.49-kg) Rammer and 12-in. (305-mm) Drop
ASTM D 1140	1954 (R 1990) Amount of Material in Soils Finer Than the No. 200 (75-Micrometer) Sieve
ASTM D 2487	1990 Classification of Soils for Engineering Purposes
ASTM D 4318	1984 Liquid Limit, Plastic Limit, and Plasticity Index of Soils
ASTM D 4397	1991 Polyethylene Sheeting for Construction, Industrial, and Agricultural Applications

CORPS OF ENGINEERS (COE)

COE EM-385-1-1	1992 Safety and Health Requirements Manual
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FEDERAL SPECIFICATIONS (FS)

FS O-F-241 (Rev. D)	Fertilizer, Mixed, Commercial
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1.2 DEFINITIONS

1.2.1 Cohesive Materials

Materials ASTM D 2487 classified as GC, SC, ML, CL, MH, and CH. Materials classified as GM and SM will be identified as cohesive only when the fines have a plasticity index greater than zero.

1.2.2 Cohesionless Materials

Materials ASTM D 2487 classified as GW, GP, SW, and SP. Materials classified as GM and SM will be identified as cohesionless only when the

finer have a plasticity index of zero.

1.2.3 Contaminated Soil

All soils encountered at the project sites shall be considered contaminated.

1.3 SUBMITTALS

Submit the following in accordance with Attachment 7 of the Basic Contract.

1.3.1 SD-08, Statements

a. Work Plan: The plan shall reference all drawings indicated in Section 01010. The plan shall conform with the requirements of this specification, the Contractor's Site Health and Safety Plan, and applicable Government regulations and agencies. As a minimum the plan shall address the following:

1. Detail products and materials. Indicate specifications of materials to be provided, including, but not limited to: backfill material and temporary weigh scale.
2. Indicate sequence and methods for excavation, stockpiling/storing, and backfilling or disposing of clean and contaminated soils. Describe the shoring system to be used and indicate whether or not components will remain after filling or backfilling. Describe methods to be employed to segregate and store clean and contaminated soils during excavation.
3. Indicate the method and sequence of sampling soil to determine the extent of contamination remaining in the excavation area.

1.3.2 SD-11, Factory Test Reports

- a. Certification that imported material is free of contamination.

1.3.3 SD-12, Field Test Reports

- a. Field and laboratory confirmatory samples for soil contamination, as needed.

1.4 DELIVERY, STORAGE, AND HANDLING

Perform in a manner to prevent contamination or segregation of materials.

1.5 EXISTING SOILS INFORMATION

Reference reports noted in Section 01010, "General Paragraphs", provide information on soil type and groundwater elevations.

PART 2 PRODUCTS

2.1 SOIL MATERIALS

Free of debris, roots, wood, scrap material, vegetation, refuse, soft unsound particles, and frozen, deleterious, or objectionable materials. Unless specified otherwise, the maximum particle diameter shall be one-half the lift thickness at the intended location.

2.1.1 Common Fill

Approved, unclassified soil material with the characteristics required to compact to the soil density specified for the intended location.

2.1.2 Backfill and Fill Material

ASTM D 2487, classification GC, or SC with a maximum ASTM D 4318 liquid limit of 35, maximum ASTM D 4318 plasticity index of 12, and a maximum of 25 percent by weight passing ASTM D 1140, No. 200 sieve.

2.1.3 Topsoil

Natural, friable soil representative of productive, well-drained soils in the area, free of subsoil, stumps, rocks larger than one inch diameter, brush, weeds, toxic substances, and other material detrimental to plant growth. Amend topsoil pH range to obtain a pH of 5.5 to 7.

2.2 IMPORTED MATERIAL

All imported materials required to accomplish the work under these Contract Documents are subject to the following requirements:

- a. The Contractor must certify that all imported material is free from contamination. Certification shall be submitted to the Navy's Representative. The source of all imported soil materials must be approved by the Government. Representative samples of imported soil materials must not be hazardous by definition or specific listing under Resource Conservation Recovery Act (RCRA) or Toxic Substance Control Act (TSCA) regulations. The frequency, type, and number of tests and detection limits for analysis of hazardous constituents shall be proposed by the Contractor for approval by the Government.
- b. All tests necessary for the Contractor to locate an acceptable source of imported material shall be made by the Contractor. Certification that the material conforms to the Specification requirements along with copies of the test results from a qualified commercial testing laboratory shall be submitted to the Navy's Representative for approval at least 10 days before the material is required for use. Samples shall be representative and be clearly marked to show the source of the material and the intended use on the project. Sampling of the material source shall be done by the Contractor in accordance with ASTM D75. The Contractor shall notify the Navy's Representative at least 24 hours prior to sampling. The Navy's Representative may, at the Navy's Representative's

option, observe the sampling procedures. Tentative acceptance of the material source shall be based on an inspection of the source by the Navy's Representative and/or the certified test results submitted by the Contractor to the Navy's Representative at the Navy's Representative's discretion. No imported materials shall be delivered to the site until the proposed source and material tests have been tentatively accepted in writing by the Navy's Representative. Final acceptance will be based on tests made on samples of material taken from the completed and compacted course. All testing for final acceptance shall be performed by the Navy's Representative.

- c. Gradation tests by the Contractor shall be made on samples taken at the place of production prior to shipment. Samples of the finished product for gradation testing shall be taken in accordance with the Contractor's quality control plan or more often as determined by the Navy's Representative, if variation in gradation is occurring, or if the material appears to depart from the Specifications. The Contractor shall perform any additional tests prescribed by the Navy's Representative. Test results shall be forwarded to the Navy's Representative within 48 hours after sampling.
- d. If tests conducted by the Contractor or the Navy's Representative indicate that the material does not meet Specification requirements, material placement will be terminated until corrective measures are taken. Material which does not conform to the Specification requirements and is placed in the work shall be removed and replaced.

2.3 BORROW

Obtain borrow materials required from sources outside of Government property.

2.4 POLYETHYLENE SHEETING

ASTM D 4397

PART 3 EXECUTION

3.1 EXISTING MONITORING WELLS AT SITES 2, 9, AND 22

Do not remove or damage existing monitoring wells shown on the drawings. Provide new monitoring wells to replace any existing wells damaged or removed during the removal action.

3.2 SURFACE PREPARATION

3.2.1 Clearing and Grubbing

Unless indicated otherwise, only remove trees, stumps, logs, shrubs, and brush as necessary to obtain access to the sites or to affect the removal actions required. Contractor shall obtain approval from the Contracting Officer prior to removal of trees.

3.2.2 Unsuitable Material

Remove vegetation, debris, decayed vegetable matter, sod, mulch, and rubbish from the station daily.

3.3 PROTECTION

3.3.1 Protection Systems

Provide shoring and bracing of excavation where required.

3.3.2 Underground Obstructions

Location of the existing obstructions if indicated is approximate. The Contractor shall physically verify the location and elevation of all existing obstructions prior to starting construction.

3.3.3 Site Drainage

Provide for the collection and disposal of surface and subsurface water encountered during construction.

3.3.3.1 Surface Drainage

So that construction operations progress successfully, completely drain construction site during periods of construction to keep soil materials sufficiently dry. Provide temporary ditches, swales, and other drainage features and equipment as required to maintain dry soils. When unsuitable working platforms for equipment operation and unsuitable soil support for subsequent construction features develop, remove unsuitable material and provide new soil material as specified herein.

3.3.3.2 Subsurface Drainage

Subsurface dewatering is not required for the performance of this removal action. Dewatering will be permitted only with the approval of the Contracting Officer.

3.4 EXCAVATION OF CONTAMINATED MATERIALS

3.4.1 Materials and Equipment

- a. General: The Contractor shall provide all labor, materials, and equipment necessary to accomplish the work specified in this paragraph.
- b. Unclassified Excavation: Excavation is unclassified. All excavation shall be completed regardless of the type, nature, or condition of the materials encountered.

3.4.2 General Excavation

All excavation of every description, regardless of the type, nature, or condition of material encountered, shall be performed as specified, shown, or required to accomplish the work.

3.4.3 Limits of Excavation

- a. The contractor shall excavate all mine casings, drums, tires, scrap metal, and other solid waste debris as indicated or as specified. After all material is removed from the areas indicated, the Contractor shall scan the area with a metal detector to identify any additional buried metal items. The Contractor shall coordinate this scan with the Contracting Officer.
- b. Supplemental Excavation: Any additional materials discovered during the final scanning shall be removed. Scanning and removal procedure shall be repeated until no additional materials are discovered.
- c. Contaminated soils removed during the excavation of solid waste debris shall be stockpiled in a temporary containment area until all solid waste removal has been completed. Contaminated soils shall be placed back in the excavations for remediation at a later date.
- d. Backfilling of excavated areas will begin only after the approval of the Contracting Officer.
- e. The Contractor and the Navy's Representative shall work together closely to coordinate excavation, sampling, and analyses to minimize downtime. The Contractor shall schedule work to minimize downtime.

3.4.4 Temporary Containment of Contaminated Soil

Provide temporary containment area at location indicated by the Contracting Officer. Cover the containment area with 30 mil polyethylene sheeting. Place excavated contaminated soil on the impervious barrier and cover with 6 mil polyethylene sheeting. Provide straw bale berm around the outer limits of the containment area and cover with polyethylene sheets. Secure edges of sheets to keep polyethylene sheeting in place.

3.4.5 Loading of Excavated Materials

Contaminated materials shall be loaded into covered containers or vehicles designed to transport such materials without spillage. Care shall be taken during loading operations to minimize the potential for spillage, tracking, or other means of deposition of contaminated materials outside the work area. Contaminated materials which become spilled on roads, streets, or other areas outside the limits of excavation during the loading operation shall be immediately reported to the Contracting Officer, and immediately cleaned up to the satisfaction of the Contracting Officer.

3.4.6 Control of Dust

Dust control measures shall be in accordance with Section C, paragraph 4.12 of the Basic Contract. Keep dust down at all times, including during nonworking periods. Sprinkle or treat the soil at the site, haul roads, and other areas disturbed by operations with dust suppressants such as water. Dry brooming will not be permitted.

3.4.7 Method of Measurement

- a. The solid wastes shall be separated according to their final disposal requirements. The quantity of work done under this paragraph will be measured in tons of "Excavation" which shall be the actual weight of the solid waste removed as verified by the weigh scale ticket issued prior to shipping.
- b. No separate measurements will be made for control of water, protection of obstructions, or other work associated with the excavation and loading of contaminated materials at the site. These tasks are considered to be incidental to and part of the work specified.

3.5 FILLING AND BACKFILLING

Fill and backfill to contours, elevations, and dimensions indicated. Compact each lift before placing overlaying lift.

3.5.1 Common Fill Placement

Provide for general site. Place in 12-inch lifts. Compact areas not accessible to rollers or compactors with mechanical hand tampers. Aerate material excessively moistened by rain to a satisfactory moisture content. Finish to a smooth surface by blading, rolling with a smooth roller, or both.

3.5.2 Backfill and Fill Material Placement

Provide for the solid waste removal areas. Place in 12-inch lifts.

3.5.3 Method of Measurement

- a. The quantity of work done under this paragraph will be measured in cubic yards of "Replacement of Soil and Site Restoration" which shall consist of the volume of backfill actually placed back into excavations at the site as specified herein.
- b. No separate measurement will be made for grading or finishing the site. These tasks are considered to be incidental to and part of the work specified for "Replacement of Soil and Site Restoration."

3.6 COMPACTION

Expressed as a percentage of maximum density. Determine in-place density of existing subgrade; if required density exists, no compaction of existing subgrade will be required. Density requirements specified herein are for cohesionless materials. When cohesive materials are encountered or used, density requirements may be reduced by 5 percent.

3.6.1 General Site

Compact underneath areas designated for vegetation to 85 percent of ASTM D 698.

3.6.2 Paved Areas

Compact top 12 inches of subgrade to 95 percent of ASTM D 698. Compact fill and backfill materials to 95 percent of ASTM D 698.

3.7 FINISH OPERATIONS

3.7.1 Grading

Finish grades as indicated within one-tenth of one foot. Grade areas to drain. For existing grades that will remain but which were disturbed by Contractor's operations, grade as directed.

3.7.2 Seed

Scarify existing subgrade. Provide 4 inches of topsoil for newly graded finish earth surfaces and areas disturbed by the Contractor. If there is insufficient on-site topsoil meeting specified requirements for topsoil, provide topsoil required in excess of that available. Seed shall match existing vegetation. Provide seed at 5 pounds per 1000 square feet. Provide FS O-F-241, Type I, Class 2, 10-10-10 analysis fertilizer at 25 pounds per 1000 square feet. Provide commercial agricultural limestone of 94-80-14 analysis at 70 pounds per 1000 square feet. Provide mulch and water to establish an acceptable stand of grass.

3.7.3 Protection of Surfaces

Protect newly graded areas from traffic, erosion, and settlements that may occur. Repair or reestablish damaged grades, elevations, or slopes.

3.8 DISPOSITION OF SURPLUS MATERIAL

Remove from Government property surplus or other soil material not required or suitable for filling or backfilling, and brush, refuse, stumps, roots, and timber.

-- End of Section--

SECTION 02223

TRANSPORTATION AND DISPOSAL OF CONTAMINATED MATERIAL,
06/92

PART 1 GENERAL

1.1 SUBMITTALS

Submit the following in accordance with Attachment 7.0 of the Basic Contract.

1.1.1 Documentation

The Contractor shall provide the Navy's Representative with the following decontamination, transportation and disposal documentation:

- a. Verification that the proposed disposal site is permitted to accept the contaminated materials specified, prior to the start of excavation.
- b. Copies of manifests and other documentation required for shipment of waste materials within 24 hours after removal of waste from the site.
- c. Verification that the wastes were actually delivered and disposed of at the proposed disposal site, within 7 days of disposal.
- d. Verification that all vehicles and containers were decontaminated prior to leaving the disposal site, within 7 days of disposal.
- e. Verification that all vehicles and containers were decontaminated prior to leaving the work site, were properly operating, and were covered, within 24 hours after removal of waste from the site.

1.2 DEFINITIONS

The following definitions shall apply, in addition to the definitions for the various waste types described in Part 4.0 of the Basic Contract.

1.2.1 Government Generated Waste

Government generated waste shall include solid wastes including mine casings, drums, batteries, tires, scrap metals, and other debris, existing at the site prior to commencement of contract work. This list of contaminants may not be all inclusive.

1.2.2 Contractor Generated Waste

Contractor generated waste shall include all materials which become contaminated and other wastes as defined in the Basic Contract as a result of Contractor activity at the site after the commencement of contract work.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 Materials and Equipment

The Contractor shall furnish all labor, materials, and equipment necessary to transport and dispose of Government and Contractor generated wastes in accordance with applicable federal, state, and local requirements.

3.2 Records

The Contractor shall originate, use, and maintain the waste shipment records/manifests as required by the Resource Conservation and Recovery Act (RCRA) and the U.S. Department of Transportation.

3.3 Temporary Storage of Contaminated Materials

The Contractor shall schedule and control the work such as to minimize the quantity and duration of on site contaminated material storage. All contaminated materials stored on site shall be stored in covered containers or vehicles designed to contain such materials without spillage except that contaminated soil shall be stored as specified in Section 02220, "General Excavation, Filling, and Backfilling". Any damage or contamination caused by contaminated materials storage shall be repaired or removed to the satisfaction of the Navy's Representative.

3.4 Transportation

The Contractor shall be solely responsible for complying with all federal, state, and local requirements for transporting hazardous materials through the applicable jurisdictions and shall bear all responsibility and cost for any noncompliance. In addition to those requirements, the Contractor shall do the following:

- a. Inspect and document all vehicles and containers for proper operation and covering.
- b. Inspect all vehicles and containers for proper markings, manifest documents, and other requirements for waste shipment.
- c. Perform and document decontamination procedures prior to leaving the worksite and again before leaving the disposal site.

3.5 Disposal

All contaminated solid waste materials excavated from the site shall be disposed of in an approved treatment/disposal facility permitted to accept such materials. All materials sampled, tested, and determined not to be contaminated, shall be disposed of in accordance with Section 02050, "Demolition and Removal".

3.6 Method of Measurement

The quantity of work done under this Section will be measured in tons of "Excavation" as determined in accordance with paragraph titled "Method of Measurement" of Section 02220, "General Excavation, Filling, and Backfilling".

-- End of Section --

SECTION 02571

PAVEMENT REMOVAL AND REPLACEMENT
03/93

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION
OFFICIALS (AASHTO)

AASHTO M140 1990 Emulsified Asphalt

AASHTO M208 1990 Cationic Emulsified Asphalt

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 698 1991 Laboratory Compaction
Characteristics of Soil Using Standard Effort
(12,400 ft-lbf/ft (600 kN-m/m))

DEPARTMENT OF TRANSPORTATION (DOT)

DOT D-6.1 1988 Uniform Traffic Control Devices for
Streets and Highway

VIRGINIA DEPARTMENT OF TRANSPORTATION (VDOT)

VDOT RBS 1991 Road and Bridge Specifications

1.2 SUBMITTALS

Submit the following in accordance with Attachment 7 of the Basic Contract.

1.2.1 SD-05, Design Data

a. Job mix formula

1.2.1.1 Job Mix Formula

Submit the mix design, including mixing temperature, for approval. The bituminous mix design shall include a certified laboratory analysis of mix composition with marshall stability value, void content, and flow. After mix design approval, job mixes shall conform to the range of tolerances specified in VDOT RBS.

1.2.2 SD-13, Certificates

- a. Tack coat
- b. Stone base course

1.3 QUALITY ASSURANCE

1.3.1 Modification to References

Except as specified herein, work and materials shall be in accordance with the VDOT RBS. The provisions therein for method of measurement and payment do not apply, and references to "Engineer" shall mean the Contracting Officer.

1.4 BARRICADES AND SIGNALS

Provide and maintain temporary signs, signals, lighting devices, markings, barricades, and channelizing and hand signaling devices in accordance with DOT D-6.1 to protect personnel and new construction from damage by equipment and vehicles until the surface is approved by the Contracting Officer.

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Bituminous Concrete

VDOT RBS, Section 211, Type SM-2A for material and mix. Provide crushed stone aggregate for the bituminous mix.

2.1.2 Stone Base Course

VDOT RBS, Sections 203 and 208, Type 1, size no. 20, 21, 21A or 21B.

2.1.3 Bituminous Tack Coat

2.1.3.1 Emulsified Asphalts

AASHTO M140, Grades RS-1, MS-1, HFMS-1, SS-1, and SS-1h. Dilute the SS-1 and SS-1h asphalts at the rate of one part water to one part asphalt.

2.1.3.2 Cationic Emulsified Asphalts

AASHTO M208, Grades CRS-1, CSS-1, and CSS-1h. Dilute the CSS-1 and CSS-1h asphalts at the rate of one part water to one part asphalt.

PART 3 EXECUTION

3.1 PAVEMENT INSTALLATION

The work includes the removal of existing pavement and the provision of new pavement where trenches, pits, and other excavations are made in the existing pavement. Except as otherwise indicated, the restored pavement

area shall be the same kind and thickness as previously existed, and shall match and tie into the surrounding pavement in a neat and acceptable manner.

3.2 ROADS AND PARKING AREAS

3.2.1 Pavement Removal

Make a straight line sawcut 12 inches beyond the edge of the excavation to a minimum depth of 2 inches for bituminous concrete pavement. The pavement shall be broken up and removed, along with its base and subgrade, to the depth indicated or specified.

3.2.2 Subgrade Placement

Provide as specified in Section 02220, "General Excavation, Filling, and Backfilling."

3.2.3 Stone Base Placement

Provide a stone base course a minimum of 8 inches thick, unless indicated otherwise. Place the stone base in two equal lifts, with each lift compacted to 100 percent ASTM D 698 maximum density. At the Contractor's option, bituminous concrete may be provided in lieu of stone base material.

3.2.4 Bituminous Concrete Placement

Provide a tack coat on the exposed edges of the cold joints and on the bituminous concrete base when provided, and provide a minimum 2-inch thick bituminous concrete surface course, unless indicated otherwise, in accordance with VDOT RBS. Place in maximum of 2-inch lifts with each lift compacted to 96 percent of maximum laboratory density. The finished surface shall be uniform in texture and appearance and free of cracks and creases.

3.3 MATERIAL DISPOSAL

Provide as specified in Section 02050, "Demolition and Removal."

-- End of Section --

20 December 1994
0934

MEMORANDUM

From: Land and Game Management
To: R.O.I.C.C.

Subj: MATERIALS FOR VEGETATIVE STABILIZATION OF I.R. SITES 2,4,
9,21 AND SSA 4

1. As agreed to by all parties at the site visit on Friday, December 16, 1994, Land and Game Management has agreed to assume responsibility for the condition of the vegetative cover on the sites recently completed by I.T. Corporation.

2. As also agreed to, the Station will be responsible for any discrepancies that develop as a result of erosion, fixing them either with shop forces or by small purchase contract.

3. In order for us to properly maintain these areas, we will need the following materials. They may all be ordered for immediate delivery, and we will store them at building 53. Land and Game Management will provide the labor to apply the material during the spring seeding season.

10-10-10 Analysis Fertilizer, 5 tons (200-50 lb. bags),
\$200.00/ton, \$1,000.00 total

Regal Ladino Clover, 10-50 lb. bags, \$172.50/bag, \$1,750.00 total

Pelletized Lime, 5 tons (200-50 lb. bags), \$120.00/ton, \$600.00
total

KY-31 Tall Fescue Seed, 20-50 lb. bags, \$50.00/bag, \$1,000.00
total

Suggested Vendor: Jamestown Seed and Feed
P.O. Box 66
Norge, VA 23127
Phone No: 804-564-8528

+ Trees

SECTION 02950

WETLANDS AREA, SHRUBS, PLANTS, AND GRASS
02/91

PART 1 GENERAL

1.1 DEFINITION

1.3.1 Pesticide means soil fumigants, herbicides, insecticides, and fungicides.

1.3.2 Wetlands Restoration Area: Refers to all areas at or below the mean high water levels of Felgates Creek at Site 2, of an unnamed creek at Site 22, and of Lee Pond at Site 9 as determined during the field survey.

1.2 DELIVERY, STORAGE, AND HANDLING

1.2.1 Delivery

1.2.1.1 Fertilizer and Lime Delivery

Deliver to the site in original, unopened containers bearing manufacturer's chemical analysis, name, trade name, or trademark, and indication of conformance to state and federal laws. Fertilizer and lime may be furnished in bulk with a certificate indicating the above information.

1.2.1.2 Pesticide Delivery

Deliver to the site in original unopened containers with legible label indicating Environmental Protection Agency (EPA) registration number and manufacturer's registered uses.

1.2.2 Storage

1.2.2.1 Lime and Fertilizer Storage

Store in dry locations away from contaminants.

1.2.2.2 Pesticides and Antidesiccants Storage

Do not store with other landscape materials.

1.3 TIME RESTRICTIONS AND PLANTING CONDITIONS

1.3.1 Planting Dates

From 1 October to 1 April.

1.3.2 Restrictions

Do not plant when ground is frozen, or snow covered. Planting shall not commence until the site elevations have been restored to within one-tenth of one foot of the original site elevations.

PART 2 PRODUCTS

2.1 PLANTS

Wetland plants shall be taken from existing adjacent wetland areas for transplanting in the wetlands areas requiring restoration. Contractor shall keep plants moist during the transplanting process.

2.2 TOPSOIL

2.2.1 Existing Soil

Modify to conform to requirements specified in paragraph entitled "Composition."

2.2.2 On-Site Topsoil

Surface soil stripped and stockpiled on the site, that meets requirements specified for topsoil in paragraph entitled "Composition."

2.2.3 Off-Site Topsoil

Conform to requirements specified in paragraph entitled "Composition." Furnish additional topsoil.

2.2.4 Composition

Use of a slow release fertilizer to enhance the soil conditions during initial growth phases. The fertilizer (approximately 1 ounce per hole) should be placed in the furrow before the plant is transplanted and the roots covered.

If soil from the existing marsh area is not utilized, provide topsoil containing 5 to 20 percent organic matter, 25 to 50 percent silt, 10 to 50 percent clay and 20 to 35 percent sand, with maximum particle size of 3/4 inch.

2.3 PESTICIDES AND FERTILIZERS

All pesticides and fertilizers proposed to be used must be approved by the Contracting Officer prior to application.

2.4 WATER

Suitable quality for irrigation.

PART 3 EXECUTION

3.1 PREPARATION

3.1.1 LAYOUT

Stake out approved plant material locations and bed outlines on the project site before digging plant pits or beds. The Contracting Officer reserves

the right to adjust plant material locations to meet field conditions.

3.1.2 TRANSPORTATION

The contractor shall be responsible for providing adequate protection, packaging and handling of all plant materials during their transportation from their existing location to the resoration site. All plants injured and plants with root balls broken during the transplanting operation will be rejected. All plant material is to be planted as soon as possible after its removal from its existing location.

3.1.3 EXCAVATION, TOPSOILING AND PLANTING

Provide minimum of 4 inches of topsoil over the entire wetland area. Protect existing adjacent turf before excavations are made. Measure depth of pits from finished grade. Depth of excavation shall provide proper relation between top of ball and finished grade as specified in paragraph entitled "Handling."

3.2 PLANTING

When planting dormant herbacious wetland plant materials, the growing tip of each individual rhizome, tuber, or bulb shall be planted so that the next year's stem/shoot apical meristem is in an upright position and planted at a minimum depth of three (3) inches and a maximum depth of four (4) inches below the soil surface. The planting of wetland plant material shall not be permitted when the ground is frozen.

When planting non-dormant herbaceous wetland plant materials, each plant shall be planted so that the next year's stem/shoot apical meristem is in an upright position. The plants shall be planted so that the rhizome, tuber, or bulb portion of the plant lies below the surface of the soil. Firm foot or hand pressure shall be applied adjacent to the plant to insure good soil and plant contact.

The contractor shall furnish all necessary hoses, equipment attachments and accessories for the adequate irrigation of planted areas as required to ensure an adequate supply of water.

All grasses shall be planted on three (3) foot centers. The shrubs shall be planted six (6) foot centers along the toe of slope for the wetland area. All plants shall be placed upright and shall lean no more than 30 degrees from staight up and down. Roots shall be spread in their normal position. All broken or frayed roots shall be cut off cleanly. Shrubs and herbaceous materials shall planted at the same depths they were existing at naturally.

Each plant and the entire seeded area shall be thoroughly saturated with water. Care should be exercised when watering to avoid flooding of plants and seeds, and erosion of soil. Avoid the use of high pressure hoses.

Newly graded areas outside the limits of the mitigated wetlands area shall be topsoiled and seeded in accordance with section 02220 "General Excavation, Filling, and Backfilling."

3.3 MAINTENANCE PERIOD

Maintenance shall begin immediately after planting and shall be provided for either the relicated fresh water marsh or new shrubs and grasses. New planting and seeded areas shall be protected and maintained for a period of ten (10) weeks after formal acceptance by the Contraction Officer. Maintenance shall consist of watering activities and other necessary operations adequate to insure the survival of the planted materials and seeded areas for the duration of the maintenance period.

-- End of Section --

APPENDIX F
CLOSEOUT REPORT REQUIREMENTS

and health program consistent with 29 CFR 1910.120 is made available for the protection of workers at the response site.

(c) In a response taken under the NCP by a lead agency, an occupational safety and health program should be made available for the protection of workers at the response site, consistent with, and to the extent required by, 29 CFR 1910.120. Contracts relating to a response action under the NCP should contain assurances that the contractor at the response site will comply with this program and with any applicable provisions of the OSH Act and state OSH laws.

(d) When a state, or political subdivision of a state, without an OSHA-approved state plan is the lead agency for response, the state or political subdivision must comply with standards in 40 CFR part 311, promulgated by EPA pursuant to section 126(f) of SARA.

(e) Requirements, standards, and regulations of the Occupational Safety and Health Act of 1970 (29 U.S.C. 651 et seq.) (OSH Act) and of state laws with plans approved under section 18 of the OSH Act (state OSH laws), not directly referenced in paragraphs (a) through (d) of this section, must be complied with where applicable. Federal OSH Act requirements include, among other things, Construction Standards (29 CFR part 1926), General Industry Standards (29 CFR part 1910), and the general duty requirement of section 5(a)(1) of the OSH Act (29 U.S.C. 654(a)(1)). No action by the lead agency with respect to response activities under the NCP constitutes an exercise of statutory authority within the meaning of section 4(b)(1) of the OSH Act. All governmental agencies and private employers are directly responsible for the health and safety of their own employees.

§300.155 Public information and community relations.

(a) When an incident occurs, it is imperative to give the public prompt, accurate information on the nature of the incident and the actions underway to mitigate the damage. OSCs/RPMs and community relations personnel should ensure that all appropriate public and private interests are kept informed and that their concerns are considered throughout a response. They should coordinate with avail-

able public affairs/community relations resources to carry out this responsibility.

(b) An on-scene news office may be established to coordinate media relations and to issue official federal information on an incident. Whenever possible, it will be headed by a representative of the lead agency. The OSC/RPM determines the location of the on-scene news office, but every effort should be made to locate it near the scene of the incident. If a participating agency believes public interest warrants the issuance of statements and an on-scene news office has not been established, the affected agency should recommend its establishment. All federal news releases or statements by participating agencies should be cleared through the OSC/RPM.

(c) The community relations requirements specified in §§300.415, 300.430, and 300.435 apply to removal, remedial, and enforcement actions and are intended to promote active communication between communities affected by discharges or releases and the lead agency responsible for response actions. Community Relations Plans (CRPs) are required by EPA for certain response actions. The OSC/RPM should ensure coordination with such plans which may be in effect at the scene of a discharge or release or which may need to be developed during follow-up activities.

§300.160 Documentation and cost recovery.

(a) For releases of a hazardous substance, pollutant, or contaminant, the following provisions apply:

(1) During all phases of response, the lead agency shall complete and maintain documentation to support all actions taken under the NCP and to form the basis for cost recovery. In general, documentation shall be sufficient to provide the source and circumstances of the release, the identity of responsible parties, the response action taken, accurate accounting of federal, state, or private party costs incurred for response actions, and impacts and potential impacts to the public health and welfare and the environment. Where applicable, documentation shall state when the NRC received notification of a release of a reportable quantity.

(2) The information and reports obtained by the lead agency for Fund-financed response actions shall, as appro-

priate, be transmitted to the chair of the RRT. Copies can then be forwarded to the NRT, members of the RRT, and others as appropriate. In addition, OSCs shall submit reports as required under §300.165.

(3) The lead agency shall make available to the trustees of affected natural resources information and documentation that can assist the trustees in the determination of actual or potential natural resource injuries.

(b) For discharges of oil, documentation and cost recovery provisions are described in §300.315.

(c) Response actions undertaken by the participating agencies shall be carried out under existing programs and authorities when available. Federal agencies are to make resources available, expend funds, or participate in response to discharges and releases under their existing authority. Interagency agreements may be signed when necessary to ensure that the federal resources will be available for a timely response to a discharge or release. The ultimate decision as to the appropriateness of expending funds rests with the agency that is held accountable for such expenditures. Further funding provisions for discharges of oil are described in §300.335.

(d) The Administrator of EPA and the Administrator of the Agency for Toxic Substances and Disease Registry (ATSDR) shall assure that the costs of health assessment or health effect studies conducted under the authority of CERCLA section 104(i) are documented in accordance with standard EPA procedures for cost recovery. Documentation shall include information on the nature of the hazardous substances addressed by the research, information concerning the locations where these substances have been found, and any available information on response actions taken concerning these substances at the location.

§300.165 OSC reports.

(a) Within one year after completion of removal activities at a major discharge of oil, a major release of a hazardous substance, pollutant, or contaminant, or when requested by the RRT, the OSC/RPM shall submit to the RRT a complete report on the removal operation and the actions taken. The OSC/RPM shall at the same time send a copy of the report to the

[Sec. 300.165(a)]

Secretary of the NRT. The RRT shall review the OSC report and send to the NRT a copy of the OSC report with its comments or recommendations within 30 days after the RRT has received the OSC report.

(b) The OSC report shall record the situation as it developed, the actions taken, the resources committed, and the problems encountered.

(c) The format for the OSC report shall be as follows:

(1) Summary of Events—a chronological narrative of all events, including:

(i) The location of the hazardous substance, pollutant, or contaminant release or oil discharge, including, for oil discharges, an indication of whether the discharge was in connection with activities regulated under the Outer Continental Shelf Lands Act (OCSLA), the Trans-Alaska Pipeline Authorization Act, or the Deepwater Port Act;

(ii) The cause of the discharge or release;

(iii) The initial situation;

(iv) Efforts to obtain response by responsible parties;

(v) The organization of the response, including state participation;

(vi) The resources committed;

(vii) Content and time of notice to natural resource trustees relating injury or possible injury to natural resources;

(viii) Federal or state trustee damage assessment activities and efforts to replace or restore damaged natural resources;

(ix) Details of any threat abatement action taken under CERCLA or under section 311(c) or (d) of the CWA;

(x) Treatment/disposal/alternative technology approaches pursued and followed; and

(xi) Public information/community relations activities.

(2) Effectiveness of removal actions taken by:

(i) The responsible party(ies);

(ii) State and local forces;

(iii) Federal agencies and special teams; and

(iv) Contractors, private groups, and volunteers, if applicable.

(3) Difficulties Encountered—A list of items that affected the response, with particular attention to issues of intergovernmental coordination.

(4) Recommendations—OSC/RPM recommendations, including at a minimum:

(i) Means to prevent a recurrence of the discharge or release;

(ii) Improvement of response actions; and

(iii) Any recommended changes in the NCP, RCP, OSC contingency plan, and, as appropriate, plans developed under section 303 of SARA and other local emergency response plans.

§300.170 Federal agency participation.

Federal agencies listed in §300.175 have duties established by statute, executive order, or Presidential directive which may apply to federal response actions following, or in prevention of, the discharge of oil or release of a hazardous substance, pollutant, or contaminant. Some of these agencies also have duties relating to the rehabilitation, restoration, or replacement of natural resources injured or lost as a result of such discharge or release as described in subpart G of this part. The NRT and RRT organizational structure, and the NCP, federal regional contingency plans (RCPs), and OSC contingency plans, described in §300.210, provide for agencies to coordinate with each other in carrying out these duties.

(a) Federal agencies may be called upon by an OSC/RPM during response planning and implementation to provide assistance in their respective areas of expertise, as described in §300.175, consistent with the agencies' capabilities and authorities.

(b) In addition to their general responsibilities, federal agencies should:

(1) Make necessary information available to the Secretary of the NRT, RRTs, and OSCs/RPMs.

(2) Provide representatives to the NRT and RRTs and otherwise assist RRTs and OSCs, as necessary, in formulating RCPs and OSC contingency plans.

(3) Inform the NRT and RRTs, consistent with national security considerations, of changes in the availability of resources that would affect the operations implemented under the NCP.

(c) All federal agencies are responsible for reporting releases of hazardous substances from facilities or vessels under their jurisdiction or control in accordance with section 103 of CERCLA.

(d) All federal agencies are encouraged to report releases of pollutants or contaminants or discharges of oil from vessels under their jurisdiction or control to the NRC.

§300.175 Federal agencies: additional responsibilities and assistance.

(a) During preparedness planning or in an actual response, various federal agencies may be called upon to provide assistance in their respective areas of expertise, as indicated in paragraph (b) of this section, consistent with agency legal authorities and capabilities.

(b) The federal agencies include:

(1) The United States Coast Guard (USCG), as provided in 14 U.S.C. 1-3, is an agency in the Department of Transportation (DOT), except when operating as an agency in the United States Navy in time of war. The USCG provides the NRT vice chair, co-chairs for the standing RRTs, and predesignated OSCs for the coastal zone, as described in §300.120(a)(1). The USCG maintains continuously manned facilities which can be used for command, control, and surveillance of oil discharges and hazardous substance releases occurring in the coastal zone. The USCG also offers expertise in domestic and international fields of port safety and security, maritime law enforcement, ship navigation and construction, and the manning, operation, and safety of vessels and marine facilities. The USCG may enter into a contract or cooperative agreement with the appropriate state in order to implement a response action.

(2) The Environmental Protection Agency (EPA) chairs the NRT and co-chairs, with the USCG, the standing RRTs; provides predesignated OSCs for the inland zone and RPMs for remedial actions except as otherwise provided; and generally provides the SSC for responses in the inland zone. EPA provides expertise on environmental effects of oil discharges or releases of hazardous substances, pollutants, or contaminants, and environmental pollution control techniques. EPA also provides legal expertise on the interpretation of CERCLA and other environmental statutes. EPA may enter into a contract or cooperative agreement with the appropriate state in order to implement a response action.

(3) The Federal Emergency Management Agency (FEMA) provides guid-

[Sec. 300.175(b)(3)]